Access DB# 13426

# SEARCH REQUEST FORM

**Scientific and Technical Information Center**

Requester's Full Name: Carol Chaney Examiner #: 72248 Date: 05 Oct 2004
Art Unit: 1745 Phone Number 30 571 272 1284 Serial Number: 09/936 675
Mail Box and Bldg/Room Location: Rem 6C81 Results Format Preferred (circle): PAPER DISK E-MAIL

**If more than one search is submitted, please prioritize searches in order of need.**

**********

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Lithium-containing phosphate active materials

Inventors (please provide full names): Jeremy Barker

Earliest Priority Filing Date: 23 March 1999

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

Please search compounds

$Li_a M'_{2-b} M''_b P_{3-y} Si_y O_{12-c} Z_c$ where

$0 \leq b \leq 2$

M' M'' are metals or metalloids. M' can be the same as M''.

$0 < y \leq 3$ (there must be at least some Si in cmpd)

$0 < c < 12$

Z is a halogen

'a' should be greater than or equal to zero

Please also see independent claim 23, attached. The definition of 'a' is in error in claim.

**********

| STAFF USE ONLY | Type of Search | Vendors and cost where applicable |
|---|---|---|
| Searcher: EL | NA Sequence (#) | STN $320.40 |
| Searcher Phone #: | AA Sequence (#) | Dialog |
| Searcher Location: | Structure (#) 13 (Lexis) | Questel/Orbit |
| Date Searcher Picked Up: 10/6/04 | Bibliographic | Dr.Link |
| Date Completed: 10/6/04 | Litigation 5 | Lexis/Nexis |
| Searcher Prep & Review Time: 5 | Fulltext | Sequence Systems |
| Clerical Prep Time: | Patent Family | WWW/Internet |
| Online Time: 30 | Other | Other (specify) |

PTO-1590 (1-2000)

## AMENDMENTS TO THE CLAIMS:

This Listing of Claims will replace all prior versions, and listings, of Claims in the Application:

### Listing of Claims

1 - 22 (CANCELLED)

23 (NEW): A battery, comprising:

a first electrode comprising a first electrode active material represented by the general formula

$$Li_aM'_{2-b}M''_bP_{3-y}Si_yO_{12-c}Z_c,$$

wherein:

(a) ~~$a \geq 0$~~; $a \geq 0$.

(b) $0 \leq b \leq 2$, and M' and M" are the same or different from one another and are each selected from the group consisting of metal and metalloid elements, wherein at least one of M' and M" is multivalent;

(c) $0 < y \leq 3$; and

(d) $0 < c < 12$, and Z is a halogen; wherein M', M", Z, a, b, y, and c are selected to balance the first electrode active material total charge;

the battery further comprising a second electrode which is a counter-electrode to the first electrode; and

an electrolyte.

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=> file reg
FILE 'REGISTRY'
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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=> display history full l1-

     FILE 'LREGISTRY' ENTERED AT 16:01:56 ON 06 OCT 2004
L1             0 SEA ((LI(L)SI(L)O)/ELS (L) A7/PG) NOT ((C OR H OR N OR
                   S)/ELS OR A8/PG)

     FILE 'REGISTRY' ENTERED AT 16:03:23 ON 06 OCT 2004
L2           326 SEA ((LI(L)SI(L)O)/ELS (L) A7/PG) NOT ((C OR H OR N OR
                   S)/ELS OR A8/PG)
L3             4 SEA L2 AND P/ELS AND 5<ELC.SUB
L4           317 SEA (L2 NOT P/ELS) AND 4<ELC.SUB

     FILE 'HCAPLUS' ENTERED AT 16:11:48 ON 06 OCT 2004
L5          1789 SEA BARKER J?/AU
L6         90638 SEA LITHIUM#/TI
L7        115971 SEA PHOSPHATE#/TI
L8             7 SEA L5 AND L6 AND L7
                   D L8 1-7 TI
L9                 QUE LITHIUM# OR LI
L10                QUE PHOSPHATE#
L11           33 SEA L5 AND (L6 OR L9) AND (L7 OR L10)
                   SEL L8 1-7 RN
                   SEL L11 1-33 RN

     FILE 'REGISTRY' ENTERED AT 16:14:35 ON 06 OCT 2004
L12           37 SEA (84159-18-2/BI OR 204653-32-7/BI OR 1314-62-1/BI OR
L13          312 SEA (84159-18-2/BI OR 7440-44-0/BI OR 554-13-2/BI OR
L14            0 SEA L2 AND L12
L15            1 SEA L2 AND L13
L16            0 SEA L12 AND SI/ELS

     FILE 'HCAPLUS' ENTERED AT 16:48:17 ON 06 OCT 2004
L17            5 SEA L3
L18          457 SEA L4
L19       207652 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
                   OR GALVANI? OR WET OR DRY OR PRIMARY OR SECONDARY)(2A)(CE
                   LL OR CELLS) OR WETCELL? OR DRYCELL?
L20                QUE ELECTROD## OR CATHOD## OR ANOD##
L21            3 SEA L17 AND (L19 OR L20)
L22           25 SEA L18 AND (L19 OR L20)
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L23 0 SEA L21 AND L22
L24 25 SEA L22 NOT L21

=> file hcaplus
FILE 'HCAPLUS' ENTERED AT 16:55:00 ON 06 OCT 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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=> d l21 1-3 cbib abs hitstr hitind

L21 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2004 ACS on STN
2003:97868 Document No. 138:140078 Alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials. Barker, Jeremy; Saidi, M. Yazid; Swoyer, Jeffrey L. (Valence Technology Inc., UK). U.S. Pat. Appl. Publ. US 2003027049 A1 20030206, 22 pp., Cont.-in-part of U.S. 6,387,568. (English). CODEN: USXXCO. APPLICATION: US 2001-14822 20011026. PRIORITY: US 2000-559861 20000427.

AB An electroactive material comprises: AaMb(XY4)cZd, wherein (a) A is selected from the group consisting of Li, Na, and/or K, and a = 0-8; (b) M is ≥1 metal, comprising ≥1 metal which is capable of undergoing oxidn. to a higher valence state, and b = 1-3; (c) XY4 is selected from the group consisting of X'O4-xY'x, X'O4-yY'2y, X''S4, and mixts. thereof, where X' is P, As, Sb, Si, and/or Ge; X'' is P, As, Sb, Si, and/or Ge; Y' is halogen, x = 0-3; and y = 0-4; and c = 0-3; (d) Z is OH and/or halogen, d = 0-6; and wherein M, X, Y, Z, a, b, c, d, x, and y are selected so as to maintain the electroneutrality of the compd. Preferred embodiments include those having where c=1, those where c=2, and those where c=3. Preferred embodiments include those where a ≤1 and c=1, those where a=2 and c=1, and those where a≥3 and c=3. This invention also provides **electrodes** comprising an **electrode** active material of this invention, and **batteries** that comprise a first **electrode** having an **electrode** active material of this invention; a second **electrode** having a compatible active material; and an electrolyte.

IT **484040-25-7P**, Chromium lithium sodium fluoride phosphate silicate (CrLiNa0.2F(PO4)0.8(SiO4)0.2)
(alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)

RN 484040-25-7 HCAPLUS

CN Chromium lithium sodium fluoride phosphate silicate (CrLiNa0.2F(PO4)0.8(SiO4)0.2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O4Si | 0.2 | 17181-37-2 |
| F | 1 | 14762-94-8 |
| O4P | 0.8 | 14265-44-2 |
| Cr | 1 | 7440-47-3 |
| Na | 0.2 | 7440-23-5 |
| Li | 1 | 7439-93-2 |

IC ICM H01M004-58
ICS C01B017-98; C01B025-10; C01B033-08
NCL 429231950; 429231900; 429221000; 429223000; 429224000; 429220000; 429231500; 429222000; 423332000; 423341000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST **battery electrode** alkali transition metal halophosphate hydroxy phosphate
IT **Battery cathodes**
Hydrothermal reactions
(alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)
IT Chalcogenides
Olivine-group minerals
Oxides (inorganic), uses
(alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)
IT Carbonaceous materials (technological products)
(alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)
IT Reduction
(carbothermal; alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)
IT Phosphates, uses
(halide; alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)
IT Secondary **batteries**
(lithium; alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)
IT Halides
(phosphates; alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)
IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 77641-62-4, Nasicon
(alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)

IT 52934-02-8P, Cobalt lithium fluoride phosphate 52934-08-4P, Lithium nickel fluoride phosphate 257892-19-6P, Sodium vanadium fluoride phosphate ($Na_3V_2F_3(PO_4)_2$) 477779-87-6P, Sodium vanadium fluoride phosphate NaVFPO4 477779-89-8P, Lithium sodium vanadiumfluoride phosphate ($Li_{0.95}Na_{0.05}VF(PO_4)$) 484039-84-1P, Cobalt lithium fluoride phosphate ($CoLi_2F(PO_4)$) 484039-86-3P, Iron lithium fluoride phosphate ($FeLi_2F(PO_4)$) 484039-88-5P 484039-91-0P, Lithium nickel fluoride phosphate ($Li_2NiF(PO_4)$) 484039-93-2P, Iron lithium fluoride phosphate 484039-95-4P, Lithium manganese fluoride phosphate ($Li_2MnF(PO_4)$) 484039-97-6P, Copper lithium fluoride phosphate ($CuLi_2F(PO_4)$) 484040-01-9P, Iron lithium magnesium fluoride phosphate ($Fe_{0.9}Li_{1.25}Mg_{0.1}F_{0.25}(PO_4)$) 484040-04-2P, Sodium vanadium fluoride phosphate ($Na_{1.2}VF_{1.2}(PO_4)$) 484040-06-4P, Chromium sodium fluoride phosphate 484040-08-6P, Manganese sodium fluoride phosphate ($MnNaF(PO_4)$) 484040-10-0P, Cobalt sodium fluoride phosphate ($CoNaF(PO_4)$) 484040-12-2P, Lithium sodium vanadiumfluoride phosphate ($Li_{0.1}Na_{0.9}VF(PO_4)$) 484040-13-3P, Sodium vanadium hydroxide phosphate NaVOHPO4 484040-14-4P, Iron lithium fluoride phosphate ($Fe_2Li_4F(PO_4)_3$)) 484040-15-5P, Lithium vanadium fluoride phosphate ($Li_4V_2F(PO_4)_3$)) 484040-20-2P, Lithium manganese fluoride phosphate ($Li_5Mn_2F_2(PO_4)_3$) 484040-22-4P, Lithium vanadium fluoride phosphate ($Li_6V_2F(PO_4)_3$) **484040-25-7P**, Chromium lithium sodium fluoride phosphate silicate ($CrLiNa_{0.2}F(PO_4)_{0.8}(SiO_4)_{0.2}$) 484040-27-9P 484040-28-0P 493025-03-9P, Lithium manganese fluoride phosphate 493025-04-0P, Copper lithium fluoride phosphate
(alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)

L21 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2004 ACS on STN
2003:42884 Document No. 138:92874 Alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials. Barker, Jeremy; Saidi, M. Yazid; Swoyer, Jeffery L. (UK). U.S. Pat. Appl. Publ. US 2003013019 A1 20030116, 22 pp., Cont.-in-part of U. S. 6,387,568. (English). CODEN: USXXCO. APPLICATION: US 2001-45685 20011107. PRIORITY: US 2000-559861 20000427.

AB **Electrode** active materials comprise lithium or other alkali metals, a transition metal, a phosphate or similar moiety, and a halogen or hydroxyl moiety. Such **electrode** actives include those of the formula: $A_aM_b(XY_4)_cZ_d$ wherein (a) A is selected from the group consisting of Li, Na, K, and mixts. thereof, and $0<a\leq 6$; (b) M comprises one or more metals, comprising at least one metal which is capable of undergoing oxidn. to a higher valence state, and $1\leq b\leq 3$; (c) $XY_4$ is selected from the group consisting of $X'O_{4-x}Y'_x$, $X'O_{4-y}Y'_{2y}$ , X''S4, and mixts. thereof, where X' is P, As, Sb, Si, Ge, S, and mixts. thereof; X'' is P, As, Sb, Si, Ge and mixts. thereof; Y' is halogen; $0\leq x<3$; and $0<y<4$; and $0<c\leq 3$; (d) Z is OH, halogen, or

mixts. thereof, and 0<d≤6; and wherein M, X, Y, Z, a, b, c, d, x and y are selected so as to maintain electroneutrality of the compd. In a preferred embodiment, M comprises two or more transition metals from Groups 4 to 11 of the Periodic Table. In another preferred embodiment, M comprises M'1-mM''m, where M' is at least one transition metal from Groups 4 to 11 of the Periodic Table; M'' is at least one element from Groups 2, 3, 12, 13, or 14 of the Periodic Table, and 0<m<1. Preferred embodiments include those having where c=1, those where c=2, and those where c=3. Preferred embodiments include those where a≤1 and c=1, those where a=2 and c=1, and those where a≥3 and c=3. This invention also provides **electrodes** comprising an **electrode** active material of this invention, and **batteries** that comprise a first **electrode** having an **electrode** active material of this invention; a second **electrode** having a compatible active material; and an electrolyte.

IT **484040-25-7P**
(alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)

RN 484040-25-7 HCAPLUS

CN Chromium lithium sodium fluoride phosphate silicate (CrLiNa0.2F(PO4)0.8(SiO4)0.2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O4Si | 0.2 | 17181-37-2 |
| F | 1 | 14762-94-8 |
| O4P | 0.8 | 14265-44-2 |
| Cr | 1 | 7440-47-3 |
| Na | 0.2 | 7440-23-5 |
| Li | 1 | 7439-93-2 |

IC ICM H01M004-58
ICS C01B025-45; C01B025-30

NCL 429231900; 429231950; 429221000; 429223000; 429220000; 429224000; 429231500; 429231600; 423306000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery electrode** transition metal halophosphate hydroxyphosphate; alkali metal halophosphate hydroxyphosphate **battery electrode**; Nasicon **cathode** lithium **battery**

IT **Battery cathodes**
NASICONs
(alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)

IT Carbonaceous materials (technological products)

Oxides (inorganic), uses
(alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)

IT Secondary **batteries**
(lithium; alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)

IT Chalcogenides
(metal; alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 484039-84-1, Cobalt lithium fluoride phosphate (CoLi2F(PO4)) 484039-86-3, Iron lithium fluoride phosphate (FeLi2F(PO4)) 484039-88-5
(alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)

IT 52934-02-8P, Cobalt lithium fluoride phosphate 477779-87-6P, Sodium vanadium fluoride phosphate NaVFPO4 484039-91-0P, Lithium nickel fluoride phosphate (Li2NiF(PO4)) 484039-93-2P, Iron lithium fluoride phosphate 484039-95-4P, Lithium manganese fluoride phosphate (Li2MnF(PO4)) 484039-97-6P, Copper lithium fluoride phosphate (CuLi2F(PO4)) 484040-01-9P 484040-04-2P, Sodium vanadium fluoride phosphate (Na1.2VF1.2(PO4)) 484040-06-4P, Chromium sodium fluoride phosphate 484040-08-6P, Manganese sodium fluoride phosphate (MnNaF(PO4)) 484040-10-0P, Cobalt sodium fluoride phosphate (CoNaF(PO4)) 484040-12-2P 484040-13-3P, Sodium vanadium hydroxide phosphate (NaV(OH)(PO4)) 484040-14-4P, Iron lithium fluoride phosphate (Fe2Li4F(PO4)3) 484040-15-5P, Lithium vanadium fluoride phosphate (Li4V2F(PO4)3) 484040-20-2P, Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) **484040-25-7P** 484040-27-9P 484040-28-0P
(alkali/transition metal halo- and hydroxy-phosphates and related **electrode** active materials)

L21 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2004 ACS on STN
2000:774123 Document No. 133:352634 **Electrode** materials having increased surface conductivity. Ravet, Nathalie; Besner, Simon; Simoneau, Martin; Vallee, Alain; Armand, Michel; Magnan, Jean-francois (Hydro-Quebec, Can.). Eur. Pat. Appl. EP 1049182 A2 20001102, 22 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (French). CODEN: EPXXDW. APPLICATION: EP 2000-401207 20000502. PRIORITY: CA 1999-2270771 19990430.

AB Intercalated **electrode** materials comprising complex oxides, esp. Li oxides, are prepd., suitable for redox reaction by exchange of alkali metal ions (esp. Li) and electrons with an electrolyte. The complex oxide **electrodes** can be used in **batteries**, supercapacitors or electrochromic light moderators. The complex oxides have the general formula

AaMmZzOoNnFf, where A is alkali metal (e.g., Li), M is ≥1 transition metal (e.g., Fe, Mn, V, Ti, Mo, Nb, Zn, W), Z is ≥1 nonmetal (e.g., P, S, Si, Se, As, Ge, B, Sn), and a,m,z,o,n,f are chosen for elec. neutrality. A conductive carbon coating is formed or deposited on the surface of the **electrode** material, e.g., by pyrolysis of an org. material, hydrocarbons or polymers, for increased surface cond.

IT **304905-39-3P**
(**electrode** materials having increased surface cond.)

RN 304905-39-3 HCAPLUS

CN Lithium manganese phosphorus silicon fluoride oxide (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | x | 17778-80-2 |
| F | x | 14762-94-8 |
| P | x | 7723-14-0 |
| Si | x | 7440-21-3 |
| Mn | x | 7439-96-5 |
| Li | x | 7439-93-2 |

IC ICM H01M004-58
ICS H01M004-48; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 72, 76

ST **electrode** material carbon coated increased surface cond; **battery electrode** carbon coated increased surface cond; supercapacitor **electrode** carbon coated increased surface cond; electrochromic material carbon coated increased surface cond

IT Metallic fibers
(aluminum; **electrode** materials having increased surface cond.)

IT Windows
Windows
(electrochromic; **electrode** materials having increased surface cond.)

IT **Battery cathodes**
Capacitor **electrodes**
Electrochromic materials
**Electrodes**
Primary **batteries**
Secondary **batteries**
Thermal decomposition
(**electrode** materials having increased surface cond.)

IT Oxides (inorganic), uses

Oxynitrides
Phosphates, uses
Silicates, uses
Sulfates, uses
(**electrode** materials having increased surface cond.)

IT Carbon black, uses
EPDM rubber
(**electrode** materials having increased surface cond.)

IT Hydrocarbons, reactions
(**electrode** materials having increased surface cond.)

IT Organic compounds, reactions
(**electrode** materials having increased surface cond.)

IT Polymers, reactions
(**electrode** materials having increased surface cond.)

IT Polyolefins
(**electrode** materials having increased surface cond.)

IT Polysaccharides, reactions
(**electrode** materials having increased surface cond.)

IT Polyoxyalkylenes, uses
(electrolytes; **electrode** materials having increased surface cond.)

IT Primary **batteries**
Secondary **batteries**
(lithium; **electrode** materials having increased surface cond.)

IT Fluorides, uses
(oxyfluorides; **electrode** materials having increased surface cond.)

IT Electrolytic capacitors
(supercapacitors; **electrode** materials having increased surface cond.)

IT Electrochromic devices
Electrochromic devices
(windows; **electrode** materials having increased surface cond.)

IT 7440-44-0P, Carbon, uses 15365-14-7P, Iron lithium phosphate (FeLiPO4) 30734-08-8P, Lithium manganese silicate Li2MnSiO4 39302-37-9P, Lithium titanium oxide 180984-63-8P, Lithium magnesium titanium oxide 252943-50-3P, Lithium vanadium phosphate silicate Li3.5V2(PO4)2.5(SiO4)0.5 304905-30-4P 304905-31-5P, Iron lithium fluoride (FeLi0.2F3) 304905-32-6P, Lithium manganese nitride oxide (Li3MnNO) 304905-33-7P 304905-34-8P 304905-35-9P, Lithium magnesium titanium oxide (Li3.5Mg0.5Ti4O12) 304905-36-0P, Iron lithium phosphorus silicon oxide 304905-37-1P 304905-38-2P, Iron lithium phosphorus fluoride oxide **304905-39-3P** 304905-40-6P 304905-41-7P 304905-42-8P
(**electrode** materials having increased surface cond.)

IT 1314-35-8, Tungsten oxide WO3, uses 7782-42-5, Graphite, uses

50926-11-9, Indium tin oxide 65324-39-2, Celgard 2400
(**electrode** materials having increased surface cond.)

IT 1333-74-0, Hydrogen, uses 7440-37-1, Argon, uses 7440-59-7, Helium, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses
(**electrode** materials having increased surface cond.)

IT 78-10-4 109-72-8, Butyl lithium, uses 546-68-9 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 1344-43-0, Manganese oxide MnO, uses 5931-89-5, Cobalt acetate 5965-38-8, Cobalt oxalate dihydrate 6108-17-4, Lithium acetate dihydrate 6156-78-1, Manganese acetate tetrahydrate 6556-16-7, Manganese oxalate dihydrate 7722-76-1, Ammonium dihydrogen phosphate 7783-50-8, Iron fluoride FeF3 7803-55-6, Ammonium vanadate 9003-01-4, Polyacrylic acid 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 10028-22-5, Ferric sulfate 10102-24-6, Lithium silicate Li2SiO3 10377-52-3, Lithium phosphate Li3PO4 13463-10-0, Ferric phosphate dihydrate 14567-67-0, Vivianite 16674-78-5, Magnesium acetate tetrahydrate 25656-42-2, Lithium polyacrylate 26134-62-3, Lithium nitride 145673-07-0
(**electrode** materials having increased surface cond.)

IT 304905-43-9 305324-61-2
(**electrode** materials having increased surface cond.)

IT 57-50-1, reactions 77-47-4, Hexachlorocyclopentadiene 98-00-0D, Furfuryl alcohol, derivs., polymers 100-42-5D, Styrene, derivs., polymers 107-13-1D, Acrylonitrile, derivs., polymers 108-05-4D, Vinyl acetate, derivs., polymers 108-95-2D, Phenol, derivs., polymers, reactions 115-07-1, 1-Propene, reactions 120-12-7, Anthracene, reactions 128-69-8D, 3,4,9,10-Perylenetetracarboxylic acid dianhydride, polymers with Jeffamine 600 198-55-0D, Perylene, derivs., polymers 630-08-0, Carbon monoxide, reactions 996-70-3, Tetrakis(dimethylamino)ethylene 1321-74-0D, Divinylbenzene, derivs., polymers 6674-22-2, DBU 9002-88-4 9002-89-5 9003-07-0, Polypropylene 9003-17-2D, Polybutadiene, derivs. 9004-34-6D, Cellulose, derivs., reactions 9004-35-7, Cellulose acetate 9005-25-8D, Starch, derivs., reactions 15133-82-1, Tetrakis(triphenylphosphine)nickel 25014-41-9, Polyacrylonitrile 51736-72-2, Polyvinylidene bromide 157889-12-8, Jeffamine ED 600-perylenetetracarboxylic acid dianhydride copolymer
(**electrode** materials having increased surface cond.)

IT 75-05-8, Acetonitrile, uses 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 110-71-4 616-38-6, Dimethyl carbonate 646-06-0, Dioxolane 2832-49-7, Tetraethylsulfamide 21324-40-3, Lithium hexafluorophosphate LiPF6 25322-68-3 66950-70-7 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide
(electrolytes; **electrode** materials having increased surface cond.)

IT 7429-90-5, Aluminum, uses
(foils, grills; **electrode** materials having increased

surface cond.)
IT 7439-93-2, Lithium, uses
(foils; **electrode** materials having increased surface cond.)
IT 7440-50-8, Copper, uses
(grills; **electrode** materials having increased surface cond.)
IT 7440-02-0, Nickel, uses
(substrates; **electrode** materials having increased surface cond.)

=> d l24 1-25 cbib abs hitstr hitind

L24 ANSWER 1 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
2002:573503 Document No. 137:143014 Secondary lithium ion **battery**, **cathode** active mass, and magnesia-based sagger for firing lithium mixed oxide. Kanai, Hideyuki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2002216758 A2 20020802, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-14890 20010123.

AB The title **battery** is equipped with a **cathode** contg. a Li-contg. mixed oxide as **cathode** active mass, which is obtained by firing raw material powder in a sagger contg. MgO and/or MgAl2O4 spinel. The **cathode** active mass is also claimed. The sagger is also claimed. The **cathode** active mass has desired grain size distribution and the **battery** provides high safety by preventing ignition and long cycle life.

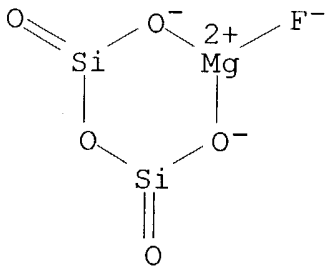
IT **444728-05-6P**
(lithium mixed oxide fired in sagger contg. MgO or MgAl2O4 for **cathode** in lithium **battery**)
RN 444728-05-6 HCAPLUS
CN Cobalt lithium nickel potassium silicon fluoride oxide (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | x | 17778-80-2 |
| F | x | 14762-94-8 |
| Co | x | 7440-48-4 |
| Si | x | 7440-21-3 |
| K | x | 7440-09-7 |
| Ni | x | 7440-02-0 |
| Li | x | 7439-93-2 |

IC ICM H01M004-58

ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST magnesia spinel sagger lithium mixed oxide **cathode** **battery** safety
IT Kilns
(furniture, sagger; lithium mixed oxide fired in sagger contg. MgO or MgAl2O4 for **cathode** in lithium **battery**)
IT **Battery cathodes**
Safety
(lithium mixed oxide fired in sagger contg. MgO or MgAl2O4 for **cathode** in lithium **battery**)
IT Secondary **batteries**
(lithium; lithium mixed oxide fired in sagger contg. MgO or MgAl2O4 for **cathode** in lithium **battery**)
IT 444728-03-4P, Cobalt lithium nickel fluoride oxide (Co0.22Li1.1Ni0.78F0.05O1.95) 444728-04-5P **444728-05-6P** 444728-06-7P 444728-07-8P 444728-08-9P 444728-09-0P 444728-10-3P
(lithium mixed oxide fired in sagger contg. MgO or MgAl2O4 for **cathode** in lithium **battery**)
IT 1309-48-4, Magnesia, uses 12068-51-8, Aluminum magnesium oxide (Al2MgO4)
(sagger contg.; lithium mixed oxide fired in sagger contg. MgO or MgAl2O4 for **cathode** in lithium **battery**)

L24 ANSWER 2 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
2002:143090 Document No. 136:186687 Solid polymer **electrolyte** fuel **cell**. Fukuda, Kaoru; Asano, Yoichi; Kanaoka, Nagayuki; Saito, Nobuhiro; Nanaumi, Masaaki (Honda Giken Kogyo Kabushiki Kaisha, Japan). PCT Int. Appl. WO 2002015313 A1 20020221, 34 pp. DESIGNATED STATES: W: CA, DE, US. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP6980 20010813. PRIORITY: JP 2000-245013 20000811; JP 2001-12492 20010119; JP 2001-44087 20010220.
AB The fuel cell has an ion exchanger polymer electrolyte membrane between an **anode** and a **cathode**, where the electrolyte membrane contains dispersed H+ ion exchanged layered silicate particles and has H+ cond. ≥0.05 S/cm.
IT **56450-86-3**
(ion exchanger polymer electrolyte membranes contg. dispersed proton exchanged layered silicates for fuel cells)
RN 56450-86-3 HCAPLUS
CN Magnesate(1-), fluoro[pentaoxodisilicato(2-)-O,O']-, lithium sodium (2:1:1) (9CI) (CA INDEX NAME)



●1/2 $Li^+$

●1/2 $Na^+$

IC ICM H01M008-02
ICS H01M008-10
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST fuel **cell** polymer **electrolyte** proton exchanged silicate salt
IT Fuel **cell electrolytes**
(ion exchanger polymer electrolyte membranes contg. dispersed proton exchanged layered silicates for fuel cells)
IT 1318-00-9, Vermiculite 1318-74-7, Kaolinite, uses 1318-93-0, Montmorillonite, uses 1319-41-1, Saponite 12068-50-7, Halloysite 12173-47-6, Hectorite 12173-60-3, Illite 12417-86-6, Stevensite **56450-86-3** 56450-90-9, Magnesium sodium fluoride silicate ($Mg_5Na_2F_4(Si_2O_5)_4$)
(ion exchanger polymer electrolyte membranes contg. dispersed proton exchanged layered silicates for fuel cells)

L24 ANSWER 3 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
2001:833694 Document No. 135:360231 Rechargeable **battery** including an inorganic **anode**. Amatucci, Glenn; Tarascon, Jean-Marie (Telcordia Technologies, Inc., USA). PCT Int. Appl. WO 2001086741 A1 20011115, 14 pp. DESIGNATED STATES: W: AU, CA, CN, IL, IN, JP, KR, MX, SG; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US14680 20010507. PRIORITY: US 2000-568970 20000511.
AB The present invention relates to secondary lithium **batteries** which include inorg. compd. for the neg. **electrode** and a

**cathode** compd. for the pos. **electrode** which comprises Li2Mn2-xMexO4-zFz wherein 0 ≤ x ≤ 0.5 and can be optimized to match the irreversible capacity loss assocd. with a chosen inorg. neg. **electrode**; 0 ≤ z ≤ 0.5; and Me is selected from the group consisting of Al, Cr, Zn, Co, Ni, Li, Mg, Fe, Cu, Ti, Si or combinations thereof. In addn., the present invention relates to rechargeable plastic lithium ion **batteries** having a pos. **electrode**, a neg. **electrode**, and a separator element arranged between the **electrodes**, wherein the pos. **electrode** includes an intercalation compd. of Li2Mn2-xMexO4-zFz as set forth above and the neg. **electrode** includes an active inorg. compd.

IT **372966-32-0**
(rechargeable **battery** including inorg. **anode**)

RN 372966-32-0 HCAPLUS

CN Lithium manganese fluoride oxide silicate (Li2Mn1.5-2F0-0.5O1.5-4(SiO4)0-0.5) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 1.5 - 4 | 17778-80-2 |
| O4Si | 0 - 0.5 | 17181-37-2 |
| F | 0 - 0.5 | 14762-94-8 |
| Mn | 1.5 - 2 | 7439-96-5 |
| Li | 2 | 7439-93-2 |

IC ICM H01M004-58
ICS H01M004-50; C01B013-14; C01G047-00; C01D015-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium secondary **battery** inorg **anode**

IT Fluorides, uses
Nitrides
Oxides (inorganic), uses
Sulfides, uses
(inorg.; rechargeable **battery** including inorg. **anode**)

IT Secondary **batteries**
(lithium; rechargeable **battery** including inorg. **anode**)

IT **Battery anodes**
**Battery cathodes**
(rechargeable **battery** including inorg. **anode**)

IT Inorganic compounds
Intercalation compounds
(rechargeable **battery** including inorg. **anode**)

IT 166187-76-4, Lithium manganese oxide li2mn2o4 372966-24-0 372966-25-1 372966-26-2, Cobalt lithium manganese fluoride oxide

(Co0-0.5Li2Mn1.5-2F0-0.5O3.5-4) 372966-27-3, Iron lithium manganese fluoride oxide (Fe0-0.5Li2Mn1.5-2F0-0.5O3.5-4) 372966-28-4, Copper lithium manganese fluoride oxide (Cu0-0.5Li2Mn1.5-2F0-0.5O3.5-4) 372966-29-5, Lithium manganese zinc fluoride oxide (Li2Mn1.5-2Zn0-0.5F0-0.5O3.5-4) 372966-30-8, Lithium manganese nickel fluoride oxide (Li2Mn1.5-2Ni0-0.5F0-0.5O3.5-4) 372966-31-9 **372966-32-0** 372966-33-1 372966-34-2, Lithium manganese fluoride oxide (Li2-2.5Mn1.5-2F0-0.5O3.5-4)
(rechargeable **battery** including inorg. **anode**)

L24 ANSWER 4 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
2001:710093 Document No. 135:275329 Manufacture of **battery** **electrode** by using thixotropy-imparting agent and secondary nonaqueous-electrolyte **battery** with the **electrode**
. Hasegawa, Masaki; Tsutsumi, Shuji; Yamaura, Junichi; Hayashi, Tetsuya; Inaba, Junichi; Sakurai, Yoji; Arai, Hajime (Matsushita Battery Industrial Co., Ltd., Japan; Nippon Telegraph and Telephone Corp.). Jpn. Kokai Tokkyo Koho JP 2001266855 A2 20010928, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-82944 20000323.

AB An active mass slurry contg. Li-intercalatable materials, org. solvents, and a thixotropy-imparting agent is applied on a current collector for manufg. the **electrode**. The thixotropy-imparting agent is oxidized polyethylene, fatty acid amide, fatty acid glyceride, and/or smectite. The obtained **electrode** has active mass layers with uniform compn. and properties.

IT **113972-58-0**
(intercalated; applying active mass slurry contg. thixotropy-imparting agent for manufg. **electrode** with uniform compn. and properties for nonaq.-electrolyte **battery**)

RN 113972-58-0 HCAPLUS

CN Lithium magnesium sodium fluoride silicate (Li0.33Mg2.67Na0.33F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.33 | 7440-23-5 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.33 | 7439-93-2 |

IC ICM H01M004-04
ICS H01M004-02; H01M004-58; H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **electrode** thixotropy imparting agent nonaq electrolyte

**battery**; oxidized polyethylene thixotropy imparting agent **electrode battery**; fatty acid amid thixotropy imparting agent **electrode battery**; glyceride fatty acid thixotropy imparting agent **electrode battery**; smectite thixotropy imparting agent **electrode battery**

IT **Battery anodes**
**Battery cathodes**
Thixotropy
(applying active mass slurry contg. thixotropy-imparting agent for manufg. **electrode** with uniform compn. and properties for nonaq.-electrolyte **battery**)

IT Amides, uses
(fatty, wax; applying active mass slurry contg. thixotropy-imparting agent for manufg. **electrode** with uniform compn. and properties for nonaq.-electrolyte **battery**)

IT Bentonite, uses
Smectite-group minerals
(synthetic; applying active mass slurry contg. thixotropy-imparting agent for manufg. **electrode** with uniform compn. and properties for nonaq.-electrolyte **battery**)

IT 174421-81-9, Cobalt lithium nitride (Co0.5Li2.5N)
(active mass; applying active mass slurry contg. thixotropy-imparting agent for manufg. **electrode** with uniform compn. and properties for nonaq.-electrolyte **battery**)

IT 9002-88-4D, Polyethylene, oxidized 131257-47-1, Disparlon 4200-20 149316-65-4 158193-17-0, SAF 161849-40-7, Disparlon A 603-20X
(applying active mass slurry contg. thixotropy-imparting agent for manufg. **electrode** with uniform compn. and properties for nonaq.-electrolyte **battery**)

IT **113972-58-0** 362663-48-7, Aluminum magnesium sodium silicate (Al1.67Mg0.33Na0.33(Si2O5)2)
(intercalated; applying active mass slurry contg. thixotropy-imparting agent for manufg. **electrode** with uniform compn. and properties for nonaq.-electrolyte **battery**)

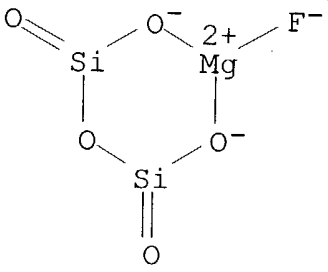
L24 ANSWER 5 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
2001:380883 Document No. 135:2519 Biosensor using inorganic fine particles. Katsuki, Koji; Hamamoto, Katsumi; Yagi, Yuji; Fukuoka, Takao (Arkray, Inc., Japan). PCT Int. Appl. WO 2001036954 A1 20010525, 37 pp. DESIGNATED STATES: W: JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2000-JP8029 20001114. PRIORITY: JP 1999-361450 19991115.

AB A biosensor for blood anal. is designed so that it comprises an **electrode** system (e.g., gold, carbon, silver) consisting of a working **electrode** and a counter **electrode** on a baseplate, an inorg. layer contg. inorg. fine particles (e.g., expansive particles, clay mineral, expansive layered silicate, smectite, hectorite, saponite, montmorillonite, sodium fluorotetrasilicic mica, taeniolite) formed on the **electrode** system, and a reagent layer contg. an oxidoreductase, an electron mediator and insol. polymer (e.g., polyamide, polymer or copolymer of acrylic acid, methacrylic acid, maleic acid, acrylic ester, methacrylic ester, maleic ester, styrene, styrene deriv.) formed on the inorg. layer. The inorg. particles prevent impurities in a sample from contacting with, and adhering to, the **electrode** systems, thus allowing the measurements with a high accuracy. The inorg. layer can be formed by applying a dispersion of inorg. fine particles and drying it, and the inorg. particles are preferably contained in the form of an aggregate.

IT **12020-86-9**, Taeniolite
(biosensor using inorg. fine particles)

RN 12020-86-9 HCAPLUS

CN Taeniolite (LiK[MgF(Si2O5)]2) (9CI) (CA INDEX NAME)




●1/2 $K^+$

●1/2 $Li^+$

IC ICM G01N027-327
ICS G01N031-22; G01N033-52; C12Q001-00

CC 9-1 (Biochemical Methods)

ST biosensor inorg fine particle **electrode** blood

IT Aggregates

Biosensors
Blood analysis
Dispersion (of materials)
**Electrodes**
Evaporation
Hematocrit
Impurities
(biosensor using inorg. fine particles)

IT **Electrodes**
(counter; biosensor using inorg. fine particles)

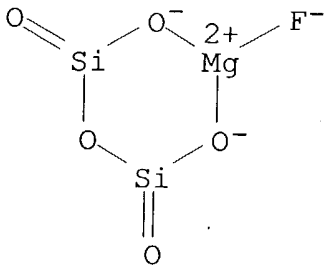
IT 1318-93-0, Montmorillonite ((Al1.33-1.67Mg0.33-0.67)(Ca0-1Na0-1)0.33Si4(OH)2O10.xH2O), analysis 1319-41-1, Saponite **12020-86-9**, Taeniolite 12173-47-6, Hectorite
(biosensor using inorg. fine particles)

L24 ANSWER 6 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
2000:760032 Document No. 134:19305 Clay/carbon nanocomposites as precursors of **electrode** materials for lithium-ion **batteries** and supercapacitors. Duclaux, Laurent; Frackowiak, Elzbieta; Gibinski, Tomasz; Benoit, Roland; Beguin, Francois (CRMD, CNRS-University, Orleans, 45071, Fr.). Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals, 340, 449-454 (English) 2000. CODEN: MCLCE9. ISSN: 1058-725X. Publisher: Gordon & Breach Science Publishers.

AB Chars prepd. by pyrolysis of org. precursors (indoine blue, safranine, pyrene) in the interlayer space of taeniolite were used as **electrode** materials in lithium/carbon cells. Due to oxidn. of interlayer carbon by the silicate host, they contain a high amt. of surface groups, and their essentially mesoporous character is attributed to the space liberated by the elimination of the clay template. A large reversible capacity for lithium insertion, up to 900 mAh/g, was detected for these materials. The chars presented a high capacitance which could reach 85 F/g in KOH electrolyte if they were formed below 850°C. Such a high value relatively to the low BET surface area of the chars is strictly related to the important mesopore vol. and to the rich surface functionality.

IT **12020-86-9**, Taeniolite
(matrix; clay/carbon nanocomposites as precursors of **electrode** materials for lithium-ion **batteries** and supercapacitors)

RN 12020-86-9 HCAPLUS
CN Taeniolite (LiK[MgF(Si2O5)]2) (9CI) (CA INDEX NAME)



●1/2 $K^+$

●1/2 $Li^+$

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 72

ST clay carbon nanocomposite precursor **anode electrode**; lithium **battery anode** supercapacitor **electrode** precursor

IT **Battery anodes**
Chars
Intercalation
Surface area
(clay/carbon nanocomposites as precursors of **electrode** materials for lithium-ion **batteries** and supercapacitors)

IT Secondary **batteries**
(lithium; clay/carbon nanocomposites as precursors of **electrode** materials for lithium-ion **batteries** and supercapacitors)

IT Capacitor **electrodes**
(supercapacitor; clay/carbon nanocomposites as precursors of **electrode** materials for lithium-ion **batteries** and supercapacitors)

IT 129-00-0, Pyrene, uses 477-73-6, Safranine 4569-88-4, Indoine Blue
(char precursor; clay/carbon nanocomposites as precursors of **electrode** materials for lithium-ion **batteries** and supercapacitors)

IT 7440-44-0, Carbon, uses
(clay/carbon nanocomposites as precursors of **electrode**

materials for lithium-ion **batteries** and supercapacitors)

IT **12020-86-9**, Taeniolite
(matrix; clay/carbon nanocomposites as precursors of **electrode** materials for lithium-ion **batteries** and supercapacitors)

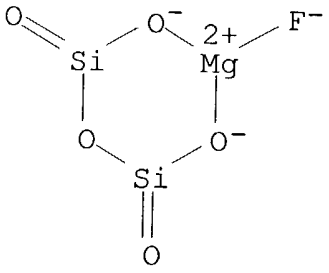
L24 ANSWER 7 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1999:745653 Document No. 132:24818 Sulfone containing clay electrolytes and their potential for Li-rechargeable **batteries**. Moore, Gregory J.; Whittingham, M. Stanley (Chemistry Department and Materials Research Center, SUNY at Binghamton, Binghamton, NY, 13902-6016, USA). Materials Research Society Symposium Proceedings, 548(Solid State Ionics V), 173-179 (English) 1999. CODEN: MRSPDH. ISSN: 0272-9172. Publisher: Materials Research Society.

AB Clays have been synthesized and several types of mols. have been intercalated into them to enhance their ionic cond. The clay has the mol. formula of Li-taeniolite, Li(Mg2Li)Si4O10F2, and the inserted mols. include PEO and two varieties of sulfone, tetramethylene sulfone and ethylmethyl sulfone. These have been made in the interest of electrolytes in lithium secondary **batteries** in order to produce a truly solid state cell. The products have been throughly characterized by x-ray diffraction to verify the uptake of the mols. into the layers, thermal anal. to observe the stabilization of the intercalated mols., along with impedance measurements to test their cond.

IT **39343-44-7**, Taeniolite
(sulfone contg. clay electrolytes and their potential for Li-rechargeable **batteries**)

RN 39343-44-7 HCAPLUS

CN Taeniolite (Li[MgF(Si2O5)]) (9CI) (CA INDEX NAME)




● $Li^+$

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery** electrolyte Sulfone contg clay
IT Secondary **batteries**
(lithium; sulfone contg. clay electrolytes and their potential for Li-rechargeable **batteries**)
IT **Battery** electrolytes
(sulfone contg. clay electrolytes and their potential for Li-rechargeable **batteries**)
IT Polyoxyalkylenes, uses
(sulfone contg. clay electrolytes and their potential for Li-rechargeable **batteries**)
IT **39343-44-7**, Taeniolite
(sulfone contg. clay electrolytes and their potential for Li-rechargeable **batteries**)
IT 126-33-0, Tetramethylene sulfone 594-43-4, Ethylmethyl sulfone 25322-68-3, Peo
(sulfone contg. clay electrolytes and their potential for Li-rechargeable **batteries**)

L24 ANSWER 8 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1999:490359 Document No. 131:118518 Secondary nonaqueous electrolyte **batteries**. Suzuki, Takashi; Nagura, Hideaki (Fuji Electrochemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11214000 A2 19990806 Heisei, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-11789 19980123.
AB The **batteries** use **cathodes** composed of laminar inorg. compds. selected from XMg2Li(Si4O10)F2 (X = Li, Na, and/or K), X1/3Mg2/3Li1/3(Si4O10)F2, YMg2.5(Si4O10)F2 (Y = Na and/or K), and KMg3Li(AlSi3O10)F2.
IT **113972-58-0 114952-65-7**, Lithium magnesium fluoride silicate (Li0.67Mg2.67F2(Si2O5)2) **120178-85-0 129039-90-3 137575-23-6 157453-26-4**, Lithium magnesium fluoride silicate (LiMgF(Si2O5)) **232587-53-0 232587-54-1 232587-55-2 232587-56-3 232587-57-4 232587-58-5 232587-59-6 232587-60-9 232587-61-0 232587-62-1 232587-63-2 232587-64-3 232587-65-4 232587-66-5 232587-68-7 232587-70-1 232587-71-2 232587-72-3 232587-76-7**
(compns. of synthetic taeniolite and hectorite and mica type compds. for **cathodes** in secondary lithium **batteries**)
RN 113972-58-0 HCAPLUS
CN Lithium magnesium sodium fluoride silicate (Li0.33Mg2.67Na0.33F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.33 | 7440-23-5 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.33 | 7439-93-2 |

RN 114952-65-7 HCAPLUS
CN Lithium magnesium fluoride silicate (Li0.67Mg2.67F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.67 | 7439-93-2 |

RN 120178-85-0 HCAPLUS
CN Lithium magnesium sodium fluoride silicate (Li1.5Mg2Na0.5F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.5 | 7440-23-5 |
| Mg | 2 | 7439-95-4 |
| Li | 1.5 | 7439-93-2 |

RN 129039-90-3 HCAPLUS
CN Lithium magnesium sodium fluoride silicate (LiMg2NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mg | 2 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 137575-23-6 HCAPLUS

CN Lithium magnesium potassium fluoride silicate (Li0.33Mg2.67K0.33F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| K | 0.33 | 7440-09-7 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.33 | 7439-93-2 |

RN 157453-26-4 HCAPLUS
CN Lithium magnesium fluoride silicate (LiMgF(Si2O5)) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 1 | 20328-07-8 |
| F | 1 | 14762-94-8 |
| Mg | 1 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 232587-53-0 HCAPLUS
CN Lithium magnesium potassium fluoride silicate (LiMg2KF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| K | 1 | 7440-09-7 |
| Mg | 2 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 232587-54-1 HCAPLUS
CN Lithium magnesium sodium fluoride silicate (Li1.25Mg2Na0.75F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.75 | 7440-23-5 |
| Mg | 2 | 7439-95-4 |

| | | |
|---|---|---|
| Li | 1.25 | 7439-93-2 |

RN 232587-55-2 HCAPLUS
CN Lithium magnesium sodium fluoride silicate (Li1.75Mg2Na0.25F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.25 | 7440-23-5 |
| Mg | 2 | 7439-95-4 |
| Li | 1.75 | 7439-93-2 |

RN 232587-56-3 HCAPLUS
CN Lithium magnesium potassium sodium fluoride silicate (LiMg2K0.75Na0.25F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.25 | 7440-23-5 |
| K | 0.75 | 7440-09-7 |
| Mg | 2 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 232587-57-4 HCAPLUS
CN Lithium magnesium potassium sodium fluoride silicate (LiMg2K0.5Na0.5F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.5 | 7440-23-5 |
| K | 0.5 | 7440-09-7 |
| Mg | 2 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 232587-58-5 HCAPLUS
CN Lithium magnesium potassium sodium fluoride silicate (LiMg2K0.25Na0.75F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component |
|---|---|---|

| | | Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.75 | 7440-23-5 |
| K | 0.25 | 7440-09-7 |
| Mg | 2 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 232587-59-6 HCAPLUS
CN Lithium magnesium potassium fluoride silicate (Li1.75Mg2K0.25F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| K | 0.25 | 7440-09-7 |
| Mg | 2 | 7439-95-4 |
| Li | 1.75 | 7439-93-2 |

RN 232587-60-9 HCAPLUS
CN Lithium magnesium potassium fluoride silicate (Li1.5Mg2K0.5F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| K | 0.5 | 7440-09-7 |
| Mg | 2 | 7439-95-4 |
| Li | 1.5 | 7439-93-2 |

RN 232587-61-0 HCAPLUS
CN Lithium magnesium potassium fluoride silicate (Li1.25Mg2K0.75F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| K | 0.75 | 7440-09-7 |
| Mg | 2 | 7439-95-4 |
| Li | 1.25 | 7439-93-2 |

RN 232587-62-1 HCAPLUS
CN Lithium magnesium sodium fluoride silicate (Li0.41Mg2.67Na0.25F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.25 | 7440-23-5 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.41 | 7439-93-2 |

RN 232587-63-2 HCAPLUS
CN Lithium magnesium sodium fluoride silicate (Li0.5Mg2.67Na0.16F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.16 | 7440-23-5 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.5 | 7439-93-2 |

RN 232587-64-3 HCAPLUS
CN Lithium magnesium sodium fluoride silicate (Li0.58Mg2.67Na0.08F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.08 | 7440-23-5 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.58 | 7439-93-2 |

RN 232587-65-4 HCAPLUS
CN Lithium magnesium potassium sodium fluoride silicate (Li0.33Mg2.67K0.25Na0.08F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |

| | | |
|---|---|---|
| Na | 0.08 | 7440-23-5 |
| K | 0.25 | 7440-09-7 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.33 | 7439-93-2 |

RN 232587-66-5 HCAPLUS
CN Lithium magnesium potassium sodium fluoride silicate (Li0.33Mg2.67K0.16Na0.16F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.16 | 7440-23-5 |
| K | 0.16 | 7440-09-7 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.33 | 7439-93-2 |

RN 232587-68-7 HCAPLUS
CN Lithium magnesium potassium sodium fluoride silicate (Li0.33Mg2.67K0.08Na0.25F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 0.25 | 7440-23-5 |
| K | 0.08 | 7440-09-7 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.33 | 7439-93-2 |

RN 232587-70-1 HCAPLUS
CN Lithium magnesium potassium fluoride silicate (Li0.58Mg2.67K0.08F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| K | 0.08 | 7440-09-7 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.58 | 7439-93-2 |

RN 232587-71-2 HCAPLUS
CN Lithium magnesium potassium fluoride silicate

(Li0.5Mg2.67K0.16F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| K | 0.16 | 7440-09-7 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.5 | 7439-93-2 |

RN 232587-72-3 HCAPLUS
CN Lithium magnesium potassium fluoride silicate (Li0.41Mg2.67K0.25F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| K | 0.25 | 7440-09-7 |
| Mg | 2.67 | 7439-95-4 |
| Li | 0.41 | 7439-93-2 |

RN 232587-76-7 HCAPLUS
CN Aluminum lithium magnesium potassium fluoride oxide silicate (AlLiMg3KF2O(SiO3)3) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 1 | 17778-80-2 |
| O3Si | 3 | 15593-90-5 |
| F | 2 | 14762-94-8 |
| K | 1 | 7440-09-7 |
| Mg | 3 | 7439-95-4 |
| Li | 1 | 7439-93-2 |
| Al | 1 | 7429-90-5 |

IC ICM H01M004-58
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery cathode** magnesium lithium silicate fluoride; sodium potassium magnesium silicate fluoride **cathode**; aluminosilicate fluoride **cathode battery**
IT **Battery cathodes**
(compns. of synthetic taeniolite and hectorite and mica type

compds. for **cathodes** in secondary lithium **batteries**)

IT 12528-34-6, Magnesium potassium fluoride silicate (Mg5K2F4(Si2O5)4) 56450-90-9, Magnesium sodium fluoride silicate (Mg5Na2F4(Si2O5)4) **113972-58-0 114952-65-7**, Lithium magnesium fluoride silicate (Li0.67Mg2.67F2(Si2O5)2) **120178-85-0 129039-90-3 137575-23-6 157453-26-4**, Lithium magnesium fluoride silicate (LiMgF(Si2O5)) **232587-53-0 232587-54-1 232587-55-2 232587-56-3 232587-57-4 232587-58-5 232587-59-6 232587-60-9 232587-61-0 232587-62-1 232587-63-2 232587-64-3 232587-65-4 232587-66-5 232587-68-7 232587-70-1 232587-71-2 232587-72-3** 232587-73-4 232587-74-5 232587-75-6 **232587-76-7**
(compns. of synthetic taeniolite and hectorite and mica type compds. for **cathodes** in secondary lithium **batteries**)

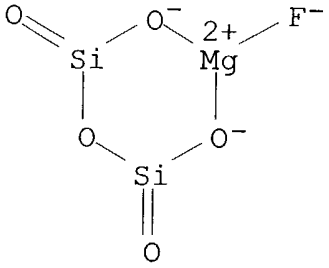
L24 ANSWER 9 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1999:465095 Document No. 131:274078 Novel carbons from nanocomposites for high lithium storage. Duclaux, L.; Frakowiak, E.; Beguin, F. (CRMD, CNRS-Universite, Orleans, 45071, Fr.). Journal of Power Sources, 81-82, 323-327 (English) 1999. CODEN: JPSODZ. ISSN: 0378-7753. Publisher: Elsevier Science S.A..

AB Carbons obtained by the pyrolysis of Taeniolite/Indoine blue and Taeniolite/Safranine nanocomposites were investigated for the lithium storage in Li/carbon cells. A high reversible capacity (900 mA h/g) was found, esp. for carbons prepd. at 700°. The mesoporous character due to the oxidn. of the interlayer carbon by the neighbor SiO4 tetrahedra during the pyrolysis is responsible for the important insertion of lithium and for the capacitive properties (90 F/g). The high polarization between insertion and extn. of lithium is strictly connected with these properties. For comparison, carbons reduced with hydrogen and obtained from the pure precursor (Indoine blue) were investigated to elucidate the role of heteroatoms. Voltammetry expts. proved that insertion of lithium is kinetically limited.

IT **39343-44-7**, Taeniolite
(carbons from nanocomposites for high lithium storage)

RN 39343-44-7 HCAPLUS

CN Taeniolite (Li[MgF(Si2O5)]) (9CI) (CA INDEX NAME)



● $Li^+$

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST lithium **battery anode** nanocomposite derived carbon
IT **Battery anodes**
Nanocomposites
(carbons from nanocomposites for high lithium storage)
IT Secondary **batteries**
(lithium; carbons from nanocomposites for high lithium storage)
IT **39343-44-7**, Taeniolite
(carbons from nanocomposites for high lithium storage)

L24 ANSWER 10 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1999:388383 Document No. 131:21347 Modified lithium vanadium oxide **cathode** materials for lithium **batteries.**
Thackeray, Michael M.; Kahaian, Arthur J.; Visser, Donald R.; Dees, Dennis W.; Benedek, Roy (The University of Chicago as Operator of Argonne National Laboratory, USA). PCT Int. Appl. WO 9930378 A1 19990617, 44 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1998-US25613 19981203. PRIORITY: US 1997-985441 19971205.
AB A method of improving certain vanadium oxide formulations is presented. The method concerns fluorine doping formulations having a nominal formula of LiV3O8. Preferred av. formulations are provided wherein the av. oxidn. state of the vanadium is at least 4.6. Herein preferred fluorine doped vanadium oxide materials,

**electrodes** using such materials, and **batteries** including at least one **electrode** therein comprising such materials are provided.

IT **226564-44-9**, Lithium silicon vanadium fluoride oxide
(modified lithium vanadium oxide **cathode** materials for lithium **batteries**)

RN 226564-44-9 HCAPLUS

CN Lithium silicon vanadium fluoride oxide (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | x | 17778-80-2 |
| F | x | 14762-94-8 |
| V | x | 7440-62-2 |
| Si | x | 7440-21-3 |
| Li | x | 7439-93-2 |

IC ICM H01M004-48

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium vanadium oxide **cathode battery**

IT **Battery cathodes**
(modified lithium vanadium oxide **cathode** materials for lithium **batteries**)

IT 106605-60-1, Lithium vanadium oxide Li1.2V3O8 226564-43-8, Aluminum lithium vanadium fluoride oxide **226564-44-9**, Lithium silicon vanadium fluoride oxide 226564-46-1 226564-49-4, Lithium scandium vanadium fluoride oxide 226564-51-8, Lithium titanium vanadium fluoride oxide 226564-52-9, Chromium lithium vanadium fluoride oxide 226564-55-2 226564-56-3, Iron lithium vanadium fluoride oxide 226564-58-5, Cobalt lithium vanadium fluoride oxide 226564-60-9, Lithium vanadium zinc fluoride oxide 226564-62-1 226564-65-4, Lithium vanadium yttrium fluoride oxide 226564-67-6 226564-70-1 226564-72-3 226564-74-5, Lithium vanadium fluoride oxide (Li1.2V3F0.1O7.9) 226564-76-7, Lithium vanadium fluoride oxide (Li1.2V3F0.2O7.8) 226564-78-9, Lithium vanadium fluoride oxide (Li1.25V2.95F0.2O7.8) 226564-80-3, Lithium titanium vanadium fluoride oxide (Li1.25Ti0.11V2.89F0.1O7.9) 226564-82-5 226564-84-7 226564-85-8 226564-87-0 226564-89-2, Iron lithium vanadium fluoride oxide (Fe0.15Li1.2V2.85F0.1O7.9) 226564-90-5, Lithium nickel vanadium fluoride oxide (Li1.2Ni0.07V2.93F0.2O7.8) 226564-91-6, Lithium titanium vanadium fluoride oxide (Li1.2Ti0.2V2.8F0.1O0.9) 226565-09-9, Lithium niobium vanadium fluoride oxide
(modified lithium vanadium oxide **cathode** materials for lithium **batteries**)

L24 ANSWER 11 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN

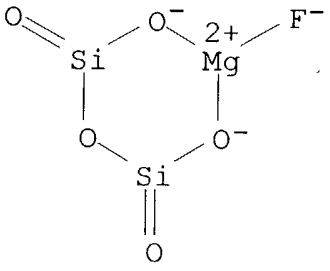
1998:656248 Document No. 129:284730 Solid electrolyte containing layered clay compound and lithium secondary **battery** and electric double-layer capacitor using it.. Maruyama, Akira; Suzuki, Takashi; Ooe, Kazuhide (TDK Electronics Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10269844 A2 19981009 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-74809 19970327.

AB The solid electrolyte comprises an electrolytic soln. contg. an electrolyte and an org. solvent and (A) a gel-forming polymer by mixing with the electrolytic soln. and/or (B) a smectite- or mica-based swellable layered clay compd. The secondary **battery** has a separator composed of the above solid electrolyte. The elec. double-layer capacitor contains the above solid electrolyte. The electrolyte shows high elec. cond. and gives secondary **batteries** with low internal resistance and elec. double-layer capacitors with high capacitance.

IT **12020-86-9**, Taeniolite
(lithium secondary **battery** and elec. double-layer capacitor using solid electrolyte contg. layered clay compd.)

RN 12020-86-9 HCAPLUS

CN Taeniolite (LiK[MgF(Si2O5)]2) (9CI) (CA INDEX NAME)




●1/2 $K^+$

●1/2 $Li^+$

IC ICM H01B001-12
ICS H01G009-025; H01M010-40

CC 76-10 (Electric Phenomena)
Section cross-reference(s): 52

ST solid electrolyte swellable layered clay smectite; mica swellable layered clay solid electrolyte; secondary **battery** lithium

layered clay electrolyte; elec double layer capacitor solid electrolyte

IT Capacitors
(double layer; lithium secondary **battery** and elec. double-layer capacitor using solid electrolyte contg. layered clay compd.)

IT Polycarbonates, uses
(electrolytic soln. component; lithium secondary **battery** and elec. double-layer capacitor using solid electrolyte contg. layered clay compd.)

IT Inorganic compounds
(layered; lithium secondary **battery** and elec. double-layer capacitor using solid electrolyte contg. layered clay compd.)

IT **Battery** electrolytes
Secondary **batteries**
Solid electrolytes
(lithium secondary **battery** and elec. double-layer capacitor using solid electrolyte contg. layered clay compd.)

IT Fluoropolymers, uses
(lithium secondary **battery** and elec. double-layer capacitor using solid electrolyte contg. layered clay compd.)

IT 7791-03-9, Lithium perchlorate
(electrolyte; lithium secondary **battery** and elec. double-layer capacitor using solid electrolyte contg. layered clay compd.)

IT 1319-41-1, Saponite **12020-86-9**, Taeniolite
(lithium secondary **battery** and elec. double-layer capacitor using solid electrolyte contg. layered clay compd.)

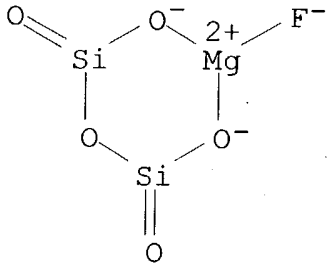
IT 24937-79-9, Kynar 741
(lithium secondary **battery** and elec. double-layer capacitor using solid electrolyte contg. layered clay compd.)

L24 ANSWER 12 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1997:402759 Document No. 127:37109 Secondary lithium **batteries** and manufacture of carbonaceous laminates. Suzuki, Takeru; Kaya, Masaaki (TDK Electronics Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09106819 A2 19970422 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-287932 19951009.

AB The **batteries** use carbonaceous laminates, having interplanar spacing d002 0.335-0.337 nm and unit cell lengths Lc(9002) 60-100 nm and La(110) 0.5-2 μm, as **anode** active mass. The laminates are prepd. by intercalating a C source into a layer structured clay, polymg. and carbonizing the C source, removing the clay by acid, and heat treating at ≥2700° for 0.5-72 h.

IT **12020-86-9**, Taeniolite
(manuf. of carbonaceous laminates from carbon sources and layer

structured clays for lithium **battery anodes**)
RN 12020-86-9 HCAPLUS
CN Taeniolite (LiK[MgF(Si2O5)]2) (9CI) (CA INDEX NAME)



●1/2 $K^+$

●1/2 $Li^+$

IC ICM H01M004-58
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery anode** carbonaceous laminate manuf
IT **Battery anodes**
(cryst. structure and manuf. of carbonaceous laminates for lithium **battery anodes**)
IT Carbonaceous materials (technological products)
(cryst. structure and manuf. of carbonaceous laminates for lithium **battery anodes**)
IT 98-00-0, Furfuryl alcohol **12020-86-9**, Taeniolite
(manuf. of carbonaceous laminates from carbon sources and layer structured clays for lithium **battery anodes**)
IT 7782-42-5, Graphite, uses
(synthetic; cryst. structure and manuf. of carbonaceous laminates for lithium **battery anodes**)

L24 ANSWER 13 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1997:296094 Document No. 127:7029 Fluorophlogopite and taeniolite: synthesis and nanocomposite formation. Moore, Gregory J.; Zavalij, Peter Y.; Whittingham, M. Stanley (Chemistry Department and Materials Research Center, State University of New York at

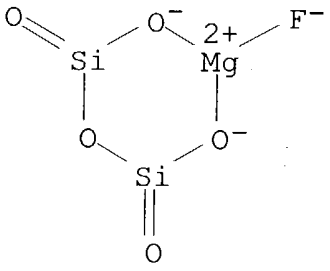
Binghamton, Binghamton, NY, 13902-6000, USA). Materials Research Society Symposium Proceedings, 457(Nanophase and Nanocomposite Materials II), 501-506 (English) 1997. CODEN: MRSPDH. ISSN: 0272-9172. Publisher: Materials Research Society.

AB Sodium fluorophlogopite and lithium taeniolite have been synthesized by new routes for application in lithium **batteries.** The fluorophlogopite synthesized by a high temp. solid state reaction, was found to be non-water-swellable and unreactive towards several mono- and divalent ions. However it was found to readily undergo ion-exchange with both copper and iron ions, with concomitant swelling to a bilayer water state. This swelled material reacted readily with long chain amines and other mols. and ions behaving like a regular swellable silicate. A taeniolite precursor was synthesized by mild hydrothermal reactions, and annealed into a well cryst. layer solid, that reacted readily with orgs. to form ordered composites that have potential use as **battery** electrolytes and **cathodes.**

IT **39343-44-7P,** Taeniolite:
(fluorophlogopite and taeniolite: synthesis and nanocomposite formation)

RN 39343-44-7 HCAPLUS

CN Taeniolite (Li[MgF(Si2O5)]) (9CI) (CA INDEX NAME)




● Li+

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST fluorophlogopite taeniolite synthesis lithium **battery** application

IT **Battery cathodes**
**Battery** electrolytes
Electric conductivity
Nanocomposites
(fluorophlogopite and taeniolite: synthesis and nanocomposite formation)

IT Secondary **batteries**
(lithium; synthesis and nanocomposite formation of fluorophlogopite and taeniolite for application in lithium **batteries**)

IT 12003-38-2P, Fluorophlogopite **39343-44-7P**, Taeniolite: 97929-57-2P, Lithium magnesium fluoride silicate 181697-47-2P, Aluminum magnesium sodium fluoride oxide silicate AlMg3NaF2O(SiO3)3
(fluorophlogopite and taeniolite: synthesis and nanocomposite formation)

L24 ANSWER 14 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1996:679492 Document No. 126:24662 Phosphor and method of making same. Qi, Ru-yi; Karam, Ronald E.; Reddy, Vaddi B.; Cox, James R. (Osram Sylvania Inc., USA). U.S. US 5567351 A 19961022, 10 pp., Cont.-in-part of U.S. Ser. No. 189,012, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1995-425848 19950420. PRIORITY: US 1992-999637 19921231; US 1994-189012 19940128.

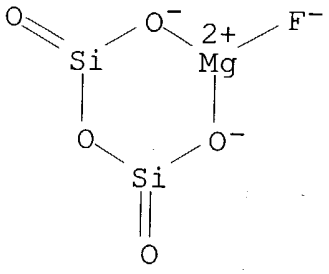
AB Inorg. intercalation phosphors are described which are made by doping an inorg. intercalation compd. having an at. structure interspersed with vacant spaces with selected activator ions capable of luminescent emission when excited by UV light and/or **cathode** rays. The phosphors are described by the general formula Ma(Mg2,Mbx,Mcy)LiSi4O10F2 (Ma is Na or Li; Mb and Mc are selected from Pb, Nb, Tb, Ti, Sn, Mn, Eu, or Ce; x = 0.0025-0.2; and y = 0-0.2). Methods for making the phosphors entail: forming a mixt. of stoichiometric amts. of Na2CO3 and Li2CO3 or LiF, or Li2CO3 and LiNO3, and MgO, SiO2, Na2SiF6 or (NH4)2SiF6 and an oxide, halide or carbonate of Mb and Mc; and firing the mixt. at 900°-1300° for between about 5 h to about 36 h to form the phosphor.

IT **56450-86-3P**, Sodium taeniolite **65012-79-5P**, Magnesate(1-), fluoro[pentaoxodisilicato(2-)]-, lithium **184425-94-3P 184425-95-4P 184425-96-5P 184425-97-6P 184425-98-7P 184425-99-8P 184426-00-4P 184426-01-5P 184426-02-6P 184426-03-7P 184426-04-8P 184426-05-9P 184426-06-0P 184426-07-1P 184426-08-2P 184426-09-3P 184426-10-6P 184426-11-7P 184426-12-8P 184426-13-9P 184426-14-0P 184426-15-1P 184426-16-2P 184426-17-3P 184426-18-4P 184426-19-5P 184426-20-8P 184426-21-9P 184426-22-0P 184426-23-1P 184426-24-2P 184426-25-3P 184426-26-4P 184426-27-5P 184426-28-6P 184426-29-7P 184426-30-0P 184426-31-1P 184426-32-2P 184426-33-3P 184426-34-4P 184426-35-5P 184426-36-6P 184426-37-7P 184426-38-8P 184426-39-9P 184426-40-2P**

(phosphors based on intercalation compds. and their prepn.)

RN 56450-86-3 HCAPLUS

CN Magnesate(1-), fluoro[pentaoxodisilicato(2-)-O,O']-, lithium sodium (2:1:1) (9CI) (CA INDEX NAME)

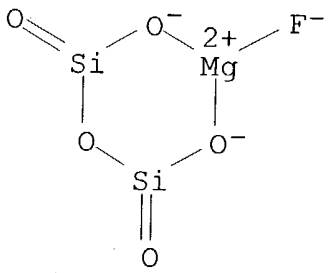


●1/2 $Li^+$

●1/2 $Na^+$

RN 65012-79-5 HCAPLUS

CN Magnesate(1-), fluoro[pentaoxodisilicato(2-)]-, lithium (9CI) (CA INDEX NAME)



● $Li^+$

RN 184425-94-3 HCAPLUS

CN Lead lithium magnesium sodium fluoride silicate

(Pb0.01LiMg1.99NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mg | 1.99 | 7439-95-4 |
| Li | 1 | 7439-93-2 |
| Pb | 0.01 | 7439-92-1 |

RN 184425-95-4 HCAPLUS
CN Lead lithium magnesium sodium fluoride silicate (Pb0.04LiMg1.96NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mg | 1.96 | 7439-95-4 |
| Li | 1 | 7439-93-2 |
| Pb | 0.04 | 7439-92-1 |

RN 184425-96-5 HCAPLUS
CN Lead lithium magnesium sodium fluoride silicate (Pb0.06LiMg1.94NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mg | 1.94 | 7439-95-4 |
| Li | 1 | 7439-93-2 |
| Pb | 0.06 | 7439-92-1 |

RN 184425-97-6 HCAPLUS
CN Lead lithium magnesium sodium fluoride silicate (Pb0.1LiMg1.9NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |

| | | |
|---|---|---|
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mg | 1.9 | 7439-95-4 |
| Li | 1 | 7439-93-2 |
| Pb | 0.1 | 7439-92-1 |

RN 184425-98-7 HCAPLUS
CN Lead lithium magnesium sodium fluoride silicate (Pb0.14LiMg1.86NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mg | 1.86 | 7439-95-4 |
| Li | 1 | 7439-93-2 |
| Pb | 0.14 | 7439-92-1 |

RN 184425-99-8 HCAPLUS
CN Lithium magnesium niobium sodium fluoride silicate (LiMg1.95Nb0.02NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Nb | 0.02 | 7440-03-1 |
| Mg | 1.95 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-00-4 HCAPLUS
CN Lithium magnesium niobium sodium fluoride silicate (LiMg1.85Nb0.06NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Nb | 0.06 | 7440-03-1 |
| Mg | 1.85 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-01-5 HCAPLUS
CN Lithium magnesium niobium sodium fluoride silicate (LiMg1.82Nb0.07NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Nb | 0.07 | 7440-03-1 |
| Mg | 1.82 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-02-6 HCAPLUS
CN Lithium magnesium niobium sodium fluoride silicate (LiMg1.78Nb0.09NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Nb | 0.09 | 7440-03-1 |
| Mg | 1.78 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-03-7 HCAPLUS
CN Lithium magnesium niobium sodium fluoride silicate (LiMg1.72Nb0.11NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Nb | 0.11 | 7440-03-1 |
| Mg | 1.72 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-04-8 HCAPLUS
CN Lithium magnesium sodium terbium fluoride silicate (LiMg1.94NaTb0.04F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|

| | | |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Tb | 0.04 | 7440-27-9 |
| Na | 1 | 7440-23-5 |
| Mg | 1.94 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-05-9 HCAPLUS
CN Lithium magnesium sodium terbium fluoride silicate (LiMg1.88NaTb0.08F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Tb | 0.08 | 7440-27-9 |
| Na | 1 | 7440-23-5 |
| Mg | 1.88 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-06-0 HCAPLUS
CN Lithium magnesium sodium terbium fluoride silicate (LiMg1.85NaTb0.1F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Tb | 0.1 | 7440-27-9 |
| Na | 1 | 7440-23-5 |
| Mg | 1.85 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-07-1 HCAPLUS
CN Lithium magnesium sodium terbium fluoride silicate (LiMg1.82NaTb0.12F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Tb | 0.12 | 7440-27-9 |
| Na | 1 | 7440-23-5 |
| Mg | 1.82 | 7439-95-4 |

| | | |
|---|---|---|
| Li | 1 | 7439-93-2 |

RN 184426-08-2 HCAPLUS
CN Lithium magnesium sodium terbium fluoride silicate (LiMg1.79NaTb0.14F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Tb | 0.14 | 7440-27-9 |
| Na | 1 | 7440-23-5 |
| Mg | 1.79 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-09-3 HCAPLUS
CN Lithium magnesium sodium tin fluoride silicate (LiMg1.99NaSn0.01F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Sn | 0.01 | 7440-31-5 |
| Na | 1 | 7440-23-5 |
| Mg | 1.99 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-10-6 HCAPLUS
CN Lithium magnesium sodium tin fluoride silicate (LiMg1.98NaSn0.02F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Sn | 0.02 | 7440-31-5 |
| Na | 1 | 7440-23-5 |
| Mg | 1.98 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-11-7 HCAPLUS
CN Lithium magnesium sodium tin fluoride silicate (LiMg1.96NaSn0.04F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Sn | 0.04 | 7440-31-5 |
| Na | 1 | 7440-23-5 |
| Mg | 1.96 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-12-8 HCAPLUS
CN Lithium magnesium sodium titanium fluoride silicate (LiMg1.96NaTi0.02F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Ti | 0.02 | 7440-32-6 |
| Na | 1 | 7440-23-5 |
| Mg | 1.96 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-13-9 HCAPLUS
CN Lithium magnesium sodium titanium fluoride silicate (LiMg1.88NaTi0.06F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Ti | 0.06 | 7440-32-6 |
| Na | 1 | 7440-23-5 |
| Mg | 1.88 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-14-0 HCAPLUS
CN Lithium magnesium sodium titanium fluoride silicate (LiMg1.84NaTi0.08F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Ti | 0.08 | 7440-32-6 |

| | | |
|---|---|---|
| Na | 1 | 7440-23-5 |
| Mg | 1.84 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-15-1 HCAPLUS
CN Lithium magnesium sodium titanium fluoride silicate (LiMg1.76NaTi0.12F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Ti | 0.12 | 7440-32-6 |
| Na | 1 | 7440-23-5 |
| Mg | 1.76 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-16-2 HCAPLUS
CN Lithium magnesium sodium titanium fluoride silicate (LiMg1.68NaTi0.16F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Ti | 0.16 | 7440-32-6 |
| Na | 1 | 7440-23-5 |
| Mg | 1.68 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-17-3 HCAPLUS
CN Lithium magnesium manganese sodium fluoride silicate (LiMg1.98Mn0.02NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mn | 0.02 | 7439-96-5 |
| Mg | 1.98 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-18-4 HCAPLUS
CN Lithium magnesium manganese sodium fluoride silicate

(LiMg1.96Mn0.04NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mn | 0.04 | 7439-96-5 |
| Mg | 1.96 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-19-5 HCAPLUS
CN Lithium magnesium manganese sodium fluoride silicate (LiMg1.94Mn0.06NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mn | 0.06 | 7439-96-5 |
| Mg | 1.94 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-20-8 HCAPLUS
CN Lithium magnesium manganese sodium fluoride silicate (LiMg1.92Mn0.08NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mn | 0.08 | 7439-96-5 |
| Mg | 1.92 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-21-9 HCAPLUS
CN Lithium magnesium manganese sodium fluoride silicate (LiMg1.88Mn0.12NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |

| | | |
|---|---|---|
| F | 2 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mn | 0.12 | 7439-96-5 |
| Mg | 1.88 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-22-0 HCAPLUS
CN Europium lithium magnesium sodium fluoride silicate (Eu0.02LiMg1.98NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Eu | 0.02 | 7440-53-1 |
| Na | 1 | 7440-23-5 |
| Mg | 1.98 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-23-1 HCAPLUS
CN Europium lithium magnesium sodium fluoride silicate (Eu0.04LiMg1.96NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Eu | 0.04 | 7440-53-1 |
| Na | 1 | 7440-23-5 |
| Mg | 1.96 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-24-2 HCAPLUS
CN Europium lithium magnesium sodium fluoride silicate (Eu0.05LiMg1.95NaF2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Eu | 0.05 | 7440-53-1 |
| Na | 1 | 7440-23-5 |
| Mg | 1.95 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

RN 184426-25-3 HCAPLUS
CN Europium lithium magnesium fluoride silicate (Eu0.02Li2Mg1.98F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Eu | 0.02 | 7440-53-1 |
| Mg | 1.98 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-26-4 HCAPLUS
CN Europium lithium magnesium fluoride silicate (Eu0.06Li2Mg1.94F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Eu | 0.06 | 7440-53-1 |
| Mg | 1.94 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-27-5 HCAPLUS
CN Europium lithium magnesium fluoride silicate (Eu0.08Li2Mg1.92F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Eu | 0.08 | 7440-53-1 |
| Mg | 1.92 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-28-6 HCAPLUS
CN Europium lithium magnesium fluoride silicate (Eu0.12Li2Mg1.88F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |

| | | |
|---|---|---|
| Eu | 0.12 | 7440-53-1 |
| Mg | 1.88 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-29-7 HCAPLUS
CN Europium lithium magnesium fluoride silicate (Eu0.2Li2Mg1.8F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Eu | 0.2 | 7440-53-1 |
| Mg | 1.8 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-30-0 HCAPLUS
CN Cerium lithium magnesium fluoride silicate (Ce0.02Li2Mg1.98F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Ce | 0.02 | 7440-45-1 |
| Mg | 1.98 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-31-1 HCAPLUS
CN Cerium lithium magnesium fluoride silicate (Ce0.04Li2Mg1.96F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Ce | 0.04 | 7440-45-1 |
| Mg | 1.96 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-32-2 HCAPLUS
CN Cerium lithium magnesium fluoride silicate (Ce0.06Li2Mg1.94F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component |
|---|---|---|

| | | Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Ce | 0.06 | 7440-45-1 |
| Mg | 1.94 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-33-3 HCAPLUS
CN Cerium lithium magnesium fluoride silicate (Ce0.08Li2Mg1.92F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Ce | 0.08 | 7440-45-1 |
| Mg | 1.92 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-34-4 HCAPLUS
CN Cerium lithium magnesium fluoride silicate (Ce0.1Li2Mg1.9F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Ce | 0.1 | 7440-45-1 |
| Mg | 1.9 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-35-5 HCAPLUS
CN Lithium magnesium manganese fluoride silicate (Li2Mg1.98Mn0.02F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Mn | 0.02 | 7439-96-5 |
| Mg | 1.98 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-36-6 HCAPLUS

CN Lithium magnesium manganese fluoride silicate (Li2Mg1.96Mn0.04F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Mn | 0.04 | 7439-96-5 |
| Mg | 1.96 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-37-7 HCAPLUS
CN Lithium magnesium manganese fluoride silicate (Li2Mg1.92Mn0.08F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Mn | 0.08 | 7439-96-5 |
| Mg | 1.92 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-38-8 HCAPLUS
CN Lithium magnesium manganese fluoride silicate (Li2Mg1.9Mn0.1F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Mn | 0.1 | 7439-96-5 |
| Mg | 1.9 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-39-9 HCAPLUS
CN Cerium lithium magnesium terbium fluoride silicate (Ce0.04Li2Mg1.94Tb0.02F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Ce | 0.04 | 7440-45-1 |

| | | |
|---|---|---|
| Tb | 0.02 | 7440-27-9 |
| Mg | 1.94 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

RN 184426-40-2 HCAPLUS
CN Europium lithium magnesium manganese fluoride silicate (Eu0.02Li2Mg1.96Mn0.02F2(Si2O5)2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 2 | 20328-07-8 |
| F | 2 | 14762-94-8 |
| Eu | 0.02 | 7440-53-1 |
| Mn | 0.02 | 7439-96-5 |
| Mg | 1.96 | 7439-95-4 |
| Li | 2 | 7439-93-2 |

IC ICM C09K011-69
ICS C09K011-59
NCL 252301400R
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
IT **56450-86-3P**, Sodium taeniolite **65012-79-5P**, Magnesate(1-), fluoro[pentaoxodisilicato(2-)]-, lithium
**184425-94-3P 184425-95-4P 184425-96-5P**
**184425-97-6P 184425-98-7P 184425-99-8P**
**184426-00-4P 184426-01-5P 184426-02-6P**
**184426-03-7P 184426-04-8P 184426-05-9P**
**184426-06-0P 184426-07-1P 184426-08-2P**
**184426-09-3P 184426-10-6P 184426-11-7P**
**184426-12-8P 184426-13-9P 184426-14-0P**
**184426-15-1P 184426-16-2P 184426-17-3P**
**184426-18-4P 184426-19-5P 184426-20-8P**
**184426-21-9P 184426-22-0P 184426-23-1P**
**184426-24-2P 184426-25-3P 184426-26-4P**
**184426-27-5P 184426-28-6P 184426-29-7P**
**184426-30-0P 184426-31-1P 184426-32-2P**
**184426-33-3P 184426-34-4P 184426-35-5P**
**184426-36-6P 184426-37-7P 184426-38-8P**
**184426-39-9P 184426-40-2P**
(phosphors based on intercalation compds. and their prepn.)

L24 ANSWER 15 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1993:461211 Document No. 119:61211 Temperature-compensated dielectric ceramic compositions. Kishi, Hiroshi; Saito, Hiroshi (Taiyo Yuden Kk, Japan). Jpn. Kokai Tokkyo Koho JP 05017222 A2 19930126 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-185678

19910628.

AB The ceramic compns. have general formula (1-α-β)[(Sr1-xCax)Ok](Ti1-yZry)O2 + αLi2SiO3 + βMF2 (M = Ca, Sr, Ba, and/or Mg; α, β = 0.01-0.05; k = 1.00-1.04; x = 0.35-0.50; yr ≤0.10). The ceramic compns. are low-temp. sinterable and useful in laminated capacitors having base metal internal **electrodes**, e.g. Cu.

IT **148736-79-2 148736-80-5 148736-81-6**
**148736-82-7 148736-83-8 148736-84-9**
**148736-85-0 148736-86-1 148736-87-2**
**148736-88-3 148736-89-4 148736-90-7**
**148736-91-8 148736-92-9 148736-93-0**
**148736-94-1 148736-95-2 148736-96-3**
**148736-97-4 148736-98-5 148736-99-6**
**148737-00-2 148737-01-3 148737-02-4**
(dielec. ceramic compns., with temp. compensation)

RN 148736-79-2 HCAPLUS

CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.36Li0.06Sr0.62Ti0.89Zr0.05F0.06O2.8(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.8 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.06 | 14762-94-8 |
| Ca | 0.36 | 7440-70-2 |
| Zr | 0.05 | 7440-67-7 |
| Ti | 0.89 | 7440-32-6 |
| Sr | 0.62 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-80-5 HCAPLUS

CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.41Li0.06Sr0.57Ti0.89Zr0.05F0.06O2.8(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.8 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.06 | 14762-94-8 |
| Ca | 0.41 | 7440-70-2 |
| Zr | 0.05 | 7440-67-7 |
| Ti | 0.89 | 7440-32-6 |
| Sr | 0.57 | 7440-24-6 |

| | | |
|---|---|---|
| Li | 0.06 | 7439-93-2 |

RN 148736-81-6 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.5Li0.06Sr0.47Ti0.89Zr0.05F0.0602.8(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.8 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.06 | 14762-94-8 |
| Ca | 0.5 | 7440-70-2 |
| Zr | 0.05 | 7440-67-7 |
| Ti | 0.89 | 7440-32-6 |
| Sr | 0.47 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-82-7 HCAPLUS
CN Barium calcium lithium strontium titanium zirconium fluoride oxide silicate (Ba0.05Ca0.47Li0.06Sr0.47Ti0.9Zr0.02F0.102.76(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.76 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.1 | 14762-94-8 |
| Ca | 0.47 | 7440-70-2 |
| Zr | 0.02 | 7440-67-7 |
| Ba | 0.05 | 7440-39-3 |
| Ti | 0.9 | 7440-32-6 |
| Sr | 0.47 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-83-8 HCAPLUS
CN Barium calcium lithium strontium titanium zirconium fluoride oxide silicate (Ba0.03Ca0.48Li0.06Sr0.48Ti0.92Zr0.02F0.0602.82(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.82 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.06 | 14762-94-8 |

| | | |
|---|---|---|
| Ca | 0.48 | 7440-70-2 |
| Zr | 0.02 | 7440-67-7 |
| Ba | 0.03 | 7440-39-3 |
| Ti | 0.92 | 7440-32-6 |
| Sr | 0.48 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-84-9 HCAPLUS
CN Calcium lithium strontium titanium fluoride oxide silicate (Ca0.37Li0.06Sr0.63Ti0.95F0.04O2.85(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.85 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.37 | 7440-70-2 |
| Ti | 0.95 | 7440-32-6 |
| Sr | 0.63 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-85-0 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.37Li0.06Sr0.63Ti0.93Zr0.02F0.04O2.85(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.85 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.37 | 7440-70-2 |
| Zr | 0.02 | 7440-67-7 |
| Ti | 0.93 | 7440-32-6 |
| Sr | 0.63 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-86-1 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.37Li0.06Sr0.63Ti0.91Zr0.04F0.04O2.85(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|

| | | |
|---|---|---|
| O | 2.85 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.37 | 7440-70-2 |
| Zr | 0.04 | 7440-67-7 |
| Ti | 0.91 | 7440-32-6 |
| Sr | 0.63 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-87-2 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.37Li0.06Sr0.63Ti0.89Zr0.06F0.04O2.85(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.85 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.37 | 7440-70-2 |
| Zr | 0.06 | 7440-67-7 |
| Ti | 0.89 | 7440-32-6 |
| Sr | 0.63 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-88-3 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.37Li0.06Sr0.63Ti0.87Zr0.08F0.04O2.85(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.85 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.37 | 7440-70-2 |
| Zr | 0.08 | 7440-67-7 |
| Ti | 0.87 | 7440-32-6 |
| Sr | 0.63 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-89-4 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.37Li0.06Sr0.63Ti0.86Zr0.1F0.04O2.85(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.85 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.37 | 7440-70-2 |
| Zr | 0.1 | 7440-67-7 |
| Ti | 0.86 | 7440-32-6 |
| Sr | 0.63 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-90-7 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.5Li0.06Sr0.49Ti0.94Zr0.02F0.02O2.88(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.88 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.02 | 14762-94-8 |
| Ca | 0.5 | 7440-70-2 |
| Zr | 0.02 | 7440-67-7 |
| Ti | 0.94 | 7440-32-6 |
| Sr | 0.49 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-91-8 HCAPLUS
CN Barium calcium lithium strontium titanium zirconium fluoride oxide silicate (Ba0.01Ca0.49Li0.06Sr0.49Ti0.94Zr0.02F0.02O2.88(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.88 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.02 | 14762-94-8 |
| Ca | 0.49 | 7440-70-2 |
| Zr | 0.02 | 7440-67-7 |
| Ba | 0.01 | 7440-39-3 |
| Ti | 0.94 | 7440-32-6 |
| Sr | 0.49 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-92-9 HCAPLUS

CN Calcium lithium magnesium strontium titanium zirconium fluoride oxide silicate (Ca0.42Li0.06Mg0.03Sr0.52Ti0.91Zr0.03F0.0602.79(SiO4) 0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.79 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.06 | 14762-94-8 |
| Ca | 0.42 | 7440-70-2 |
| Zr | 0.03 | 7440-67-7 |
| Ti | 0.91 | 7440-32-6 |
| Sr | 0.52 | 7440-24-6 |
| Mg | 0.03 | 7439-95-4 |
| Li | 0.06 | 7439-93-2 |

RN 148736-93-0 HCAPLUS
CN Calcium lithium magnesium strontium titanium zirconium fluoride oxide silicate (Ca0.43Li0.06Mg0.03Sr0.53Ti0.91Zr0.03F0.0602.81(SiO4) 0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.81 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.06 | 14762-94-8 |
| Ca | 0.43 | 7440-70-2 |
| Zr | 0.03 | 7440-67-7 |
| Ti | 0.91 | 7440-32-6 |
| Sr | 0.53 | 7440-24-6 |
| Mg | 0.03 | 7439-95-4 |
| Li | 0.06 | 7439-93-2 |

RN 148736-94-1 HCAPLUS
CN Calcium lithium magnesium strontium titanium zirconium fluoride oxide silicate (Ca0.44Li0.06Mg0.03Sr0.54Ti0.91Zr0.03F0.0602.83(SiO4) 0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.83 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.06 | 14762-94-8 |
| Ca | 0.44 | 7440-70-2 |
| Zr | 0.03 | 7440-67-7 |

| | | |
|---|---|---|
| Ti | 0.91 | 7440-32-6 |
| Sr | 0.54 | 7440-24-6 |
| Mg | 0.03 | 7439-95-4 |
| Li | 0.06 | 7439-93-2 |

RN 148736-95-2 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.4Li0.04Sr0.6Ti0.93Zr0.05F0.04O2.91(SiO4)0.02) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.91 | 17778-80-2 |
| O4Si | 0.02 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.4 | 7440-70-2 |
| Zr | 0.05 | 7440-67-7 |
| Ti | 0.93 | 7440-32-6 |
| Sr | 0.6 | 7440-24-6 |
| Li | 0.04 | 7439-93-2 |

RN 148736-96-3 HCAPLUS
CN Calcium lithium magnesium strontium titanium zirconium fluoride oxide silicate (Ca0.4Li0.04Mg0.01Sr0.59Ti0.92Zr0.05F0.04O2.9(SiO4)0.02) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.9 | 17778-80-2 |
| O4Si | 0.02 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.4 | 7440-70-2 |
| Zr | 0.05 | 7440-67-7 |
| Ti | 0.92 | 7440-32-6 |
| Sr | 0.59 | 7440-24-6 |
| Mg | 0.01 | 7439-95-4 |
| Li | 0.04 | 7439-93-2 |

RN 148736-97-4 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.36Li0.02Sr0.63Ti0.95Zr0.02F0.04O2.9(SiO4)0.01) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|

| | | |
|---|---|---|
| O | 2.9 | 17778-80-2 |
| O4Si | 0.01 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.36 | 7440-70-2 |
| Zr | 0.02 | 7440-67-7 |
| Ti | 0.95 | 7440-32-6 |
| Sr | 0.63 | 7440-24-6 |
| Li | 0.02 | 7439-93-2 |

RN 148736-98-5 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.35Li0.06Sr0.62Ti0.93Zr0.02F0.04O2.82(SiO4)0.03) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.82 | 17778-80-2 |
| O4Si | 0.03 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.35 | 7440-70-2 |
| Zr | 0.02 | 7440-67-7 |
| Ti | 0.93 | 7440-32-6 |
| Sr | 0.62 | 7440-24-6 |
| Li | 0.06 | 7439-93-2 |

RN 148736-99-6 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.35Li0.1Sr0.6Ti0.91Zr0.02F0.04O2.74(SiO4)0.05) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.74 | 17778-80-2 |
| O4Si | 0.05 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.35 | 7440-70-2 |
| Zr | 0.02 | 7440-67-7 |
| Ti | 0.91 | 7440-32-6 |
| Sr | 0.6 | 7440-24-6 |
| Li | 0.1 | 7439-93-2 |

RN 148737-00-2 HCAPLUS
CN Calcium lithium strontium titanium zirconium fluoride oxide silicate (Ca0.41Li0.04Sr0.58Ti0.91Zr0.05F0.04O2.87(SiO4)0.02) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.87 | 17778-80-2 |
| O4Si | 0.02 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.41 | 7440-70-2 |
| Zr | 0.05 | 7440-67-7 |
| Ti | 0.91 | 7440-32-6 |
| Sr | 0.58 | 7440-24-6 |
| Li | 0.04 | 7439-93-2 |

RN 148737-01-3 HCAPLUS
CN Calcium lithium magnesium strontium titanium zirconium fluoride oxide silicate (Ca0.39Li0.04Mg0.02Sr0.58Ti0.91Zr0.05F0.04O2.87(SiO4) 0.02) (9CI) (CA INDEX NAME)

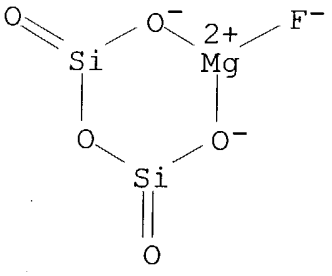
| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.87 | 17778-80-2 |
| O4Si | 0.02 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.39 | 7440-70-2 |
| Zr | 0.05 | 7440-67-7 |
| Ti | 0.91 | 7440-32-6 |
| Sr | 0.58 | 7440-24-6 |
| Mg | 0.02 | 7439-95-4 |
| Li | 0.04 | 7439-93-2 |

RN 148737-02-4 HCAPLUS
CN Barium calcium lithium strontium titanium zirconium fluoride oxide silicate (Ba0.02Ca0.39Li0.04Sr0.58Ti0.91Zr0.05F0.04O2.87(SiO4)0.02) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 2.87 | 17778-80-2 |
| O4Si | 0.02 | 17181-37-2 |
| F | 0.04 | 14762-94-8 |
| Ca | 0.39 | 7440-70-2 |
| Zr | 0.05 | 7440-67-7 |
| Ba | 0.02 | 7440-39-3 |
| Ti | 0.91 | 7440-32-6 |
| Sr | 0.58 | 7440-24-6 |
| Li | 0.04 | 7439-93-2 |

IC ICM C04B035-49
ICS H01B003-12
CC 76-10 (Electric Phenomena)
Section cross-reference(s): 57
IT **148736-79-2 148736-80-5 148736-81-6**
**148736-82-7 148736-83-8 148736-84-9**
**148736-85-0 148736-86-1 148736-87-2**
**148736-88-3 148736-89-4 148736-90-7**
**148736-91-8 148736-92-9 148736-93-0**
**148736-94-1 148736-95-2 148736-96-3**
**148736-97-4 148736-98-5 148736-99-6**
**148737-00-2 148737-01-3 148737-02-4**
(dielec. ceramic compns., with temp. compensation)

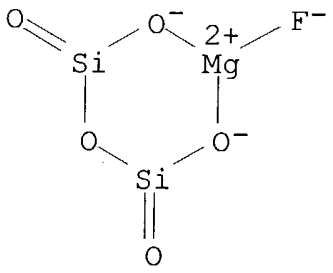
L24 ANSWER 16 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1992:131364 Document No. 116:131364 Forming images by inks. Yuasa, Toshiya (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 03205178 A2 19910906 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-407 19900108.
AB In forming images by placing an ink (showing reduced adhesion on one of the **electrodes** when placed between two **electrodes** to which a voltage is applied), applying an imagewise voltage, and transferring the ink image on one of the **electrodes** to a receptor, the ink shows viscosity increasing with increasing temp. and is used in a heated state to provide high-quality images with high sensitivity. An ink comprised glycerin 30, water 30, Li taeniolite (MLT-2) 38.5, and carbon black 2 parts.
IT **39343-44-7**, Taeniolite (Li[MgF(Si2O5)])
(inks contg., voltage- and heat-sensitive, for imaging)
RN 39343-44-7 HCAPLUS
CN Taeniolite (Li[MgF(Si2O5)]) (9CI) (CA INDEX NAME)




● $Li^+$

IC ICM B41M001-00
CC 42-12 (Coatings, Inks, and Related Products)
Section cross-reference(s): 74
IT 56-81-5, Glycerin, uses **39343-44-7**, Taeniolite (Li[MgF(Si2O5)])
(inks contg., voltage- and heat-sensitive, for imaging)

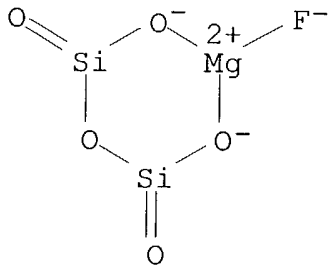
L24 ANSWER 17 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1992:117274 Document No. 116:117274 Method for transporting tacky material and imaging method using same. Arahara, Kozo; Yuasa, Toshiya; Kai, Takashi; Toyama, Jo; Mori, Akihiro; Matsumoto, Kenichi (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 03096384 A2 19910422 Heisei, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-135874 19900524. PRIORITY: JP 1989-128763 19890524; JP 1989-142898 19890607.
AB The title method comprises the steps of: (1) feeding a tacky material whose adhesive characteristics vary in response to an elec. potential impressed on it between a pair of **electrodes**; and (2) repeatedly impressing an elec. potential across the tacky material so as to lower its adhesive strength on the 1st **electrode** and allowing the material to be transported to the 2nd **electrode**. Addnl. **electrodes** can be used to successively transport the tacky material from 1 **electrode** surface to the next. Image formation is effected by feeding the tacky material in the space between a pair of **electrodes**, 1 or both of which comprises a pattern based on an insulating part and an elec. conductive part and repetitively (≥2 times) applying an elec. potential to produce an ink pattern in conformance to the above pattern.
IT **39343-44-7**, Taeniolite (Li[MgF(Si2O5)])
(tacky ink compn. contg., electroviscous)
RN 39343-44-7 HCAPLUS
CN Taeniolite (Li[MgF(Si2O5)]) (9CI) (CA INDEX NAME)



● $Li^+$

IC ICM B41M001-00
ICS B41F031-00; B65G054-00
CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT **39343-44-7**, Taeniolite (Li[MgF(Si2O5)])
(tacky ink compn. contg., electroviscous)

L24 ANSWER 18 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1992:86038 Document No. 116:86038 Image-recording inks. Yuasa, Toshiya (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 03205466 A2 19910906 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-405 19900108.
AB The title inks whose adhesion properties are changed by impressing with a **cathode** and an **anode** contacting the inks (the inks stick on either **cathode** or **anode**, and do not stick on the other **electrode**) contain fine particles, liq. dispersing medium, and fatty acid esters. Thus, glycerin 80, H2O 20, LiBF4 10, Supranol Cyanine 7BF 10, Nikkol SO 10 8, and Sumecton SA (synthetic bentonite) 50 parts were roll-kneaded to give an amorphous blue ink. A 2-mm ink layer was sandwiched with Pt-plated stainless steel **cathode** and **anode**, then impressed at 30 V, and the ink stuck only on the **anode**.
IT **39343-44-7**, Taeniolite (Li[MgF(Si2O5)])
(microparticles, recording inks contg., with changeable sticking properties by voltage impression)
RN 39343-44-7 HCAPLUS
CN Taeniolite (Li[MgF(Si2O5)]) (9CI) (CA INDEX NAME)

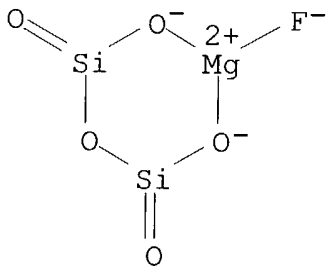


● $Li^+$

IC ICM C09D011-00
ICS B41M005-00
CC 42-12 (Coatings, Inks, and Related Products)
ST recording ink sticking **electrode**; impression **electrode** recording ink; fatty acid ester recording ink
IT **39343-44-7**, Taeniolite (Li[MgF(Si2O5)]) 120668-89-5, Bentonite 139352-27-5, Organite T
(microparticles, recording inks contg., with changeable sticking properties by voltage impression)

L24 ANSWER 19 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1991:502790 Document No. 115:102790 Image formation method. Yuasa, Toshiya; Fukumoto, Hiroshi; Matsumoto, Kenichi; Arahara, Kozo; Kai, Takashi; Kobayashi, Motokazu; Toyama, Jo (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 02286387 A2 19901126 Heisei, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-107731 19890428.
AB In imaging method using ink that change its adhesivity by application of voltage and utilizing adhesion of the ink on 1 of the **electrodes**, the gas evolved from the ink is absorbed by olefinic materials supplied on the ink surface. Olefins suppress evolution of gases, e.g. H in image formation. Thus, the ink-retaining roller covered with Al plate patterned with vinylic polymer was applied with -30 V voltage with respect to a ink-retaining roller, with an ink layer between the rollers. The ink contg. dispersed Li taeniolite, and oleic acid in micro droplets (0.2-0.8 mg/cm2) were supplied to the gap, and the ink image was transferred to a printing roller. No H was detected around the ink-retaining roller during printing.
IT **39343-44-7**, Taeniolite (Li[MgF(Si2O5)])
(printing ink for image formation utilizing change of adhesiveness by voltage application contg.)
RN 39343-44-7 HCAPLUS

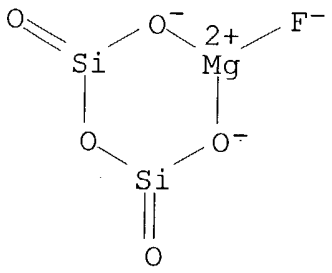
CN Taeniolite (Li[MgF(Si2O5)]) (9CI) (CA INDEX NAME)



● $Li^+$

IC ICM B41M005-00
ICS B41J002-385; B41J029-377
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT **39343-44-7**, Taeniolite (Li[MgF(Si2O5)]) 56450-90-9
(printing ink for image formation utilizing change of adhesiveness by voltage application contg.)

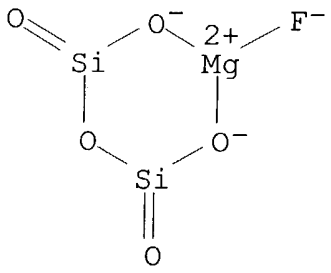
L24 ANSWER 20 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1991:494612 Document No. 115:94612 Image recording inks. Arahara, Kozo; Yuasa, Toshiya; Kobayashi, Motokazu; Kai, Takashi (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 03054273 A2 19910308 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-191105 19890724.
AB The inks, with elec. voltage-sensitive adhesive properties, have bulk resistance ≤2.6 + 104 Ω-cm. An ink having bulk resistance 1952 Ω-cm comprised glycerol 37.3, water 15.1, Supranol Cyanine 7BF 1.2, Li taeniolite 46.4, and antiseptics 0.04 part. When this ink was placed between a pair of Pt-plated stainless steel **electrodes** (**cathode**-grounded) to which +30 V was applied, then the **electrodes** were sepd., the ink adhered on the **anode**, not on the **cathode**
.
IT **39343-44-7**, Taeniolite
(inks contg., with elec. voltage-sensitive adhesive properties)
RN 39343-44-7 HCAPLUS
CN Taeniolite (Li[MgF(Si2O5)]) (9CI) (CA INDEX NAME)



● $Li^+$

IC ICM C09D011-00
ICS C09D011-00
CC 42-12 (Coatings, Inks, and Related Products)
Section cross-reference(s): 74
IT 56-81-5, 1,2,3-Propanetriol, uses and miscellaneous 14283-07-9, Lithium tetrafluoroborate 36379-01-8, Orgatix TC 400 **39343-44-7**, Taeniolite
(inks contg., with elec. voltage-sensitive adhesive properties)

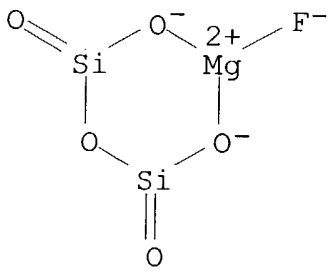
L24 ANSWER 21 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1991:230864 Document No. 114:230864 Image-printing inks. Yuasa, Toshiya; Matsumoto, Kenichi; Arahara, Kozo; Kai, Takashi; Toyama, Jo; Fukumoto, Hiroshi; Kobayashi, Motokazu (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 02299878 A2 19901212 Heisei, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-118787 19890515.
AB The title inks used in a process of (a) supplying inks between a pair of **electrodes**, whose adhesion property changes under elec. charge and (b) forming an ink deposited on 1 of the **electrodes** under elec. charge contain materials of increasing viscosity assocd. with temp. increase and materials of decreasing viscosity assocd. with temp. increase. Thus, a mixt. of 200 g glycerin and 32 g LiMg2Li(Si4O10)F2 was kneaded, blended with water 200, polyvinylpyrrolidone 70, and C black 25 g to give an amorphous colloidal sol title ink.
IT **39343-44-7**, Taeniolite (Li[MgF(Si2O5)])
(inks contg., viscosity-increasing, blends with viscosity decreasing material, for use under elec. charge)
RN 39343-44-7 HCAPLUS
CN Taeniolite (Li[MgF(Si2O5)]) (9CI) (CA INDEX NAME)



● $Li^+$

IC ICM B41M005-00
ICS B41C001-00; B41M005-20; B41M005-26; C09D011-00; C09D011-02; G03G009-12; G03G015-00
ICA B41J002-385
CC 42-12 (Coatings, Inks, and Related Products)
Section cross-reference(s): 74
ST printing ink elec charge **electrode**; lithium taeniolite polyvinylpyrrolidone blend ink
IT **39343-44-7**, Taeniolite (Li[MgF(Si2O5)]) 56450-90-9 120668-89-5, Sumecton SA
(inks contg., viscosity-increasing, blends with viscosity decreasing material, for use under elec. charge)

L24 ANSWER 22 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1991:64512 Document No. 114:64512 Transporting tacky substances and manufacture of tacky substances. Arahara, Kozo; Fukumoto, Hiroshi (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 02215617 A2 19900828 Heisei, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-260702 19891004. PRIORITY: JP 1988-251451 19881004.
AB The title process involves placing a tacky substance (e.g., ink), having adhesive properties sensitive to the polarity of voltage applied, between two **electrodes**, then applying a voltage between the **electrodes** in such a way that the entire tacky substance adheres to one **electrode**.
IT **65012-79-5**
(aq. tacky, with polarity-sensitive adhesive properties, transport of, by **electrodes**)
RN 65012-79-5 HCAPLUS
CN Magnesate(1-), fluoro[pentaoxodisilicato(2-)]-, lithium (9CI) (CA INDEX NAME)

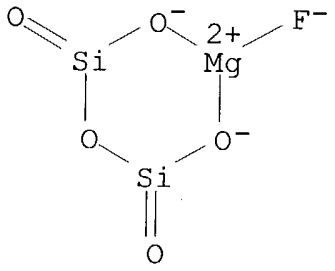


● $Li^+$

IC ICM B65G054-02
ICS B05D001-04; B41M001-00
CC 42-12 (Coatings, Inks, and Related Products)
ST tacky substance transporting **electrode**; polarity sensitive adhesion tacky ink
IT Transportation
(of tacky substances with polarity-sensitive adhesive properties, by **electrodes**)
IT Inks
(tacky, with polarity-sensitive adhesive properties, transport of, by **electrodes**)
IT **Electrodes**
(transport by, of tacky substances with polarity-sensitive adhesive properties)
IT 56-81-5, Glycerin, uses and miscellaneous 1318-93-0, Montmorillonite, uses and miscellaneous **65012-79-5**
(aq. tacky, with polarity-sensitive adhesive properties, transport of, by **electrodes**)

L24 ANSWER 23 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1990:432054 Document No. 113:32054 Electrolytic adhesion controlled recording material. Kobayashi, Motokazu; Arahara, Kohzoh; Yuasa, Toshiya; Kai, Takashi; Fukumoto, Hiroshi (Canon K. K., Japan). Eur. Pat. Appl. EP 352796 A2 19900131, 23 pp. DESIGNATED STATES: R: BE, DE, FR, GB, IT, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1989-113893 19890727. PRIORITY: JP 1988-187982 19880729; JP 1989-124250 19890519.
AB A recording is described comprising an electrolyte dispersion and a pair of **electrodes**. The recording medium is capable of changing its adhesiveness when imparted with a voltage, thereby selectivity adhering to one of the **electrodes**. The electrolyte may be selected from ≥1 of LiBF4, NaPF6, NH4PF6, and CH3CO2Na.

IT **39343-44-7**, Taeniolite (Li[MgF(Si2O5)])
(recording system contg., by change of adhesiveness by voltage application)
RN 39343-44-7 HCAPLUS
CN Taeniolite (Li[MgF(Si2O5)]) (9CI) (CA INDEX NAME)



● $Li^+$

IC ICM C09D011-00
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT 102-71-6, Triethanol amine, uses and miscellaneous 127-09-3, Sodium acetate 1330-43-4, Sodium tetraborate 14283-07-9 16941-11-0, Ammonium hexafluorophosphate 21324-39-0 **39343-44-7**, Taeniolite (Li[MgF(Si2O5)]) 122303-48-4, Eftop EF 105
(recording system contg., by change of adhesiveness by voltage application)

L24 ANSWER 24 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN
1987:645009 Document No. 107:245009 On the nature of electroactive sites in clay-modified **electrodes**. King, Randal D.; Nocera, Daniel G.; Pinnavaia, Thomas J. (Cent. Fund. Mater. Res., Michigan State Univ., East Lansing, MI, 48824, USA). Journal of Electroanalytical Chemistry and Interfacial Electrochemistry, 236(1-2), 43-53 (English) 1987. CODEN: JEIEBC. ISSN: 0022-0728.
AB The electrochem. properties of montmorillonite clay films deposited on pyrolytic graphite **electrodes** were studied by cyclic voltammetry in order to elucidate the nature of the electroactive sites. **Electrodes** coated with pre-exchanged ML32+-montmorillonite (M = Fe, Ru, Os and L = 2,2'-bipyridine (bpy); M = Fe and L = 1,10-phenanthroline), and MV2+ -montmorillonite (MV2+ = methylviologen) do not exhibit a voltammetric response when immersed in solns. contg. only electrolyte. This result showed that

the cations bound electrostatically to the exchange sites, whether intercalated within the galleries or held at the external surfaces, are rigorously electroinactive. However, these films incorporate ML32+ and MV2+ ions from soln. readily and exhibit voltammetric responses characteristic of diffusional processes. Os(bpy)32+ exchanged montmorillonite films immersed in Fe(bpy)32+ solns. showed a voltammogram only for the Fe(bpy)33+/2+ couple, and peak current values indicate that Fe(bpy)33+ did not accept electrons from Os(bpy)32+ gallery cations. The electroactivity for films immersed in ML32+ or MV2+ solns. is attributed in part to cations which were bound at the clay surface in excess of the cation exchange capacity by an ion pairing mechanism. Expts. using synthetic clays of different particle sizes suggest that binding of the ion pairs is related to the presence of edge surface sites.

IT **99269-97-3**
(**electrodes** modified with)

RN 99269-97-3 HCAPLUS

CN Lithium magnesium sodium fluoride silicate (LiMg8NaF6(Si2O5)6) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O5Si2 | 6 | 20328-07-8 |
| F | 6 | 14762-94-8 |
| Na | 1 | 7440-23-5 |
| Mg | 8 | 7439-95-4 |
| Li | 1 | 7439-93-2 |

CC 72-2 (Electrochemistry)
Section cross-reference(s): 53

ST clay modified **electrode** electroactive site; montmorillonite clay **electrode** cyclic voltammetry; fluoro hectorite modified **electrode** voltammetry; laponite clay **electrode** cyclic voltammetry

IT **Electrodes**
(pyrolytic graphite, modified with sodium ion-montmorillonite film, scanning electron microscope images of)

IT 1318-93-0, Montmorillonite, reactions
(cyclic voltammetry of, deposited on pyrolytic graphite **electrodes**)

IT 7782-42-5, Graphite, uses and miscellaneous
(**electrodes** from pyrolytic, montmorillonite clay films deposited on, cyclic voltammetry of)

IT 53320-86-8, Laponite **99269-97-3**
(**electrodes** modified with)

L24 ANSWER 25 OF 25 HCAPLUS COPYRIGHT 2004 ACS on STN

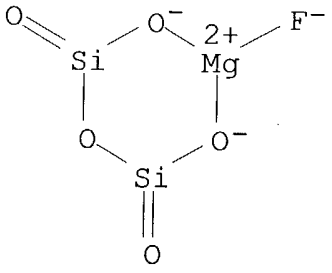
1981:142044 Document No. 94:142044 Synthetic taeniolite and process of producing the same. Daimon, Nobutoshi; Izawa, Toichiro (Japan). Brit. GB 1572500 19800730, 7 pp. (English). CODEN: BRXXAA. APPLICATION: GB 1976-8304 19760302.

AB Synthetic Li taeniolite, LiMgF(Si2O5), or Li-Ge taeniolite, LiMgF(Ge2O5), which can be hydrated and cleft into ultrafine uniform particles without the action of heat to form a sol for prepn. of reformed mica, are manufd. by melting oxides selected from Li2O, LiF, MgF2, MgO, SiO2, and GeO2 in amts. giving Li:Mg:(Si or Ge):F ratio 1:1:2:1.1-1.3 at 1250-1450°, and slowly cooling until the melt recrystallizes. Fluoride is present in 10-30 mol % excess to compensate for F loss during melting. Thus, 100 kg mixt. contg. LiF 13.92, MgO 21.62, and SiO2 64.46% was heated at 1350° using C **electrodes** and cooled at 2°/min to give LiMgF(Si2O5). A 20-cm-diam. 8 kg crystal lump was decompd. by hydration 3 h at relative humidity 80% to give .apprx.5-mm-max. diam. particles which were mixed with 15+ their wt. of H2O at 20° to give 130 L suspension. After diln. to 10% solids, settling, sepn., and ion exchange 50 h at 50-70° with K+, Al3+, or Pb2+ to replace hydratable Li+, a sol was formed contg. 150-Å-thick particles. The sol was cast into a 0.15-mm-thick sheet which had tensile strength 120 kg/mm2, insulation resistance ∞, and dielec. strength <2.0 kV/0.1 mm compared with 85 kg/mm2, 5-100 MΩ, and 0.8-1.0 kV/0.1 mm, resp., for mica manufd. from Na taeniolite which had less ion exchange capacity.

IT **65012-79-5P**
(manuf. and reformation of sols of, for mica prepn.)

RN 65012-79-5 HCAPLUS

CN Magnesate(1-), fluoro[pentaoxodisilicato(2-)]-, lithium (9CI) (CA INDEX NAME)




● $Li^+$

IC C01B033-20; C01G017-00

CC 49-4 (Industrial Inorganic Chemicals)
Section cross-reference(s): 76
IT 39417-12-4P **65012-79-5P**
(manuf. and reformation of sols of, for mica prepn.)